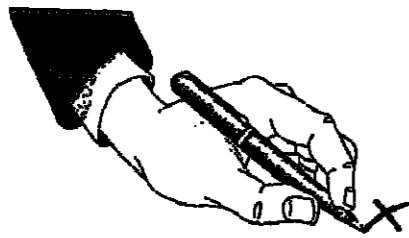


FINANCIAL TIMES



Election trends
When results
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Corruption in
industry
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Why IT suppliers
sponsor sports
Survey, Separate section

World Business Newspaper

WEDNESDAY JUNE 5 1996

New IRA ceasefire ruled out before Ulster talks start

The IRA ruled out restoring its ceasefire from terrorist activities before the start of next week's all-party talks on the future of Northern Ireland. The UK and Irish governments were last night close to agreeing an agenda for the talks, with London appearing to drop its resistance to a powerful role for former US senator George Mitchell. Page 16

Coca-Cola Enterprises buys Cadbury plants for \$1bn

Cadbury Schweppes sold its British soft-drink plants for about £700m (\$1.06bn) to give it more resources to develop its confectionery and soft drink businesses globally. The buyer was Coca-Cola Enterprises, the US bottler 44 per cent owned by Coca-Cola. Page 17; Lex, Page 16; Strategy in a bottle, Page 21

Deutsche Telekom, the German telecoms operator to be partly privatised in November in one of the world's biggest share issues, reported a 47 per cent increase in net profits from DM3.6bn in 1994 to DM5.3bn (\$3.47bn). Page 18; Lex, Page 16

Russia's Nato opposition 'softening': Germany urged fellow Nato members to take Russia's security interests into account claiming that Moscow was softening its opposition to enlarging the alliance. Page 2

French report urges tax cut: A high-level report submitted to French prime minister Alain Juppé says the government should cut the top rate of income tax from 56.8 per cent to 40 per cent and reduce the number of exemptions. Page 3

Finland prepares for ERM: Finland's parliament was last night set to approve changes in the country's currency laws clearing the way for the Finnish markka to join the European exchange rate mechanism. Page 3

Party rejects Bulgarian president: Bulgarian president Zhelyu Zhelev, 61, has been defeated in his party's primary to choose a candidate for the autumn presidential election. Page 3

Forex dealers plan safeguards: The Group of 20, the world's largest foreign exchange dealers, have stepped up efforts to control the risk of a breakdown in the \$1,230bn in payments that pass between them daily. Page 8

Romanian government in election defeat: Romania's ruling party was bracing itself for a humiliating defeat in local elections as unofficial results suggested it had won only one of the country's main cities. Page 3

Booysses, the French construction group, Stet of Italy, Cable & Wireless of the UK and Veba of Germany are preparing to launch a new telecoms venture in France. Page 17

World investment grows 40%: Worldwide flows of foreign direct investment jumped by 46 per cent last year to a record \$325bn from \$222bn in 1994, according to estimates by the United Nations Conference on Trade and Development. Page 8

European smoking campaign: Philip Morris, maker of Marlboro cigarettes, launched a European campaign against smoking bans and other attempts to reduce "smokers' rights". Page 3

Norwegian bank self-off: Norway announced a public offering of 19.8 per cent of Den norske Bank, a stake worth about Nkr12.6bn (\$388m), reducing the state's holding to 52 per cent. Page 19

Portugal drops Renault claim: Portugal is abandoning a \$538m (\$338m) claim for damages against Renault following agreement over the future of a Portuguese plant which the French vehicle manufacturer had threatened to close with the loss of 760 jobs. Page 8

Taxing times in US campaign: President Bill Clinton and Senator Bob Dole made taxation the focal point of their battle for the White House, with Mr Clinton unveiling an initiative estimated to cost \$8bn over six years. Page 4

Tokyo backs \$1.2bn China projects: Japanese contractors working on a 20-year power station project in southern China have been granted a \$300m official loan guarantee by Tokyo. Page 16

Abiola's wife killed in Nigeria: Kudirat Abiola, the wife of Moshood Abiola who is facing trial on treason charges for declaring himself Nigerian president after an annulled poll in 1993, died after being shot in the Nigerian capital, Lagos.

Japanese gunship shoots down US fighter: A Japanese destroyer accidentally shot down a US aircraft during naval exercises in the mid-Pacific, but the fighter's two crew members escaped injury.

STOCK MARKET INDICES		GOLD	
New York: S&P 500	6,661.05 (+38.90)	New York: Comex (Aug)	328.2 (38.0)
NASDAQ Composite	1,243.93 (+3.2)	London: close	339.75 (39.13)
Europe and Far East			
CAC40	2,111 (+10.1)		
DM	2,548.25 (+13.42)		
FT-SE 100	3,252.2 (+18)		
Nikkei	21,552.12 (+268.6)		
US LUNCHTIME RATES		DOLLAR	
Federal Funds	5 1/8%	New York: S&P 500	6,661.05 (1,545.95)
3-month T-bill	5 1/8%	DM	2,548.25 (1,526.25)
Long Bond	6 7/8%	FF	3,252.2 (8,170.7)
Yield	6.99%	SP	1,243.93 (2,242.6)
		Y	21,552.12 (108,225)
OTHER RATES		STERLING	
UK 3-year interest rate	6 1/8%	New York: S&P 500	6,661.05 (1,545.95)
US 10 yr T-bill	6 1/8%	DM	2,548.25 (1,526.25)
France: 10 yr OAT	106.41 (105.21)	FF	3,252.2 (8,170.7)
Germany: 10 yr Bond	58.37 (58.05)	SP	1,243.93 (2,242.6)
Japan: 10 yr JGB	58.8877 (58.0522)	Y	21,552.12 (108,225)
NORTH SEA OIL (Argus)		DM	2,548.25 (2,265)
Brent Dated	18.47 (18.25)	Tokyo \$ close	Y 188.4

Currencies		Commodities & Precious		Markets		Recent Issues			
Albania LSK 220	Germany DM 100	Lithuania Lit 15.00	Cash	QR 13.00	Share Issues	26	Share Information	26-28	
Austria S 207	Greece Dr 100	Lux Lfr 75	SA Arabia	SR 12	FT Actuaries	32	London SE	32	
Bahrain Dh 100	Hong Kong HK\$ 100	Malta Lm 100	Singapore	S\$ 100	FT/SP-A Wld Index	36	Wall Street	35-36	
Bulgaria BGN 100	India Ru 100	Malawi MK 100	Syria S\$ 100	Gold Markets	34	Int. Bond Service	26	Bourses	33-36
Cyprus C\$ 100	Ireland Ir£ 100	Neth Fl 4.75	E. Africa	R 100	Foreign Exchanges	27	Banque	33-36	
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Denmark Dkr 100	Israel Sh 100	Poland Zlot 100	Sweden Swk 100		Int. Bond Service	26			
Egypt E£ 100	Japan Yen 100	Portugal Escudo 200	Syria S\$ 100		Managed Funds	33-35			
Finland Fmk 100	South Africa Rand 100	Portugal Escudo 200	Turkey Lira 100		Money Markets	27			
France FF 100	Switzerland Sfr 100	Spain Ptas 200	UAE Dir 100						
Germany DM 100	Taiwan NT\$ 100	UK £ 100							

Illegal ticket sales threat to Euro 96

Trade will make segregation of rival fans impossible

By Jimmy Burns, Patrick Harverson and Simon Kuiper

Security arrangements for Euro 96 are being put at risk because of the growing numbers of illegal tickets going on sale four days from the start of the football tournament, senior police officers warned yesterday. Superintendent Stuart Morgan, head of planning and logistics for Hillsborough stadium in Sheffield, one of the venues, said last night: "The way tickets are being sold is going to make segregation of fans impossible. We don't know where they're going or who has them. We are preparing ourselves for rival fans sitting next to each other and that is going to cause problems in terms of crowd control."

The ticketing system for Euro 96 has been designed to keep rival fans apart. Supporters have only been allowed to buy tickets from authorised national football federations in groups of fellow nationals. Despite attempts by the police and the Football Association, the

host of the championship, to crack down on illegal ticket sales, tickets were widely available in London yesterday. The Financial Times contacted two travel agencies, a ticket outlet and a tout, all of which offered to sell Euro 96 tickets, including for potential flash-points such as the England-Holland and England-Scotland games at Wembley. The ticket agency asked £175 each for five tickets to sit with England fans at the Holland

game, although the tickets carried a face value of only £45 each. The agency did not inquire about the nationality of the buyers. The tout said tickets for the England-Scotland game with a face value of up to £35 could be bought for £250 each. The tout said they had obtained their tickets through a variety of sources, including one European football federation which had been unable to sell its quota and a continental travel operator which had also

been left with unsold seats. One City banker said he had been offered 24,000 for 22 tickets worth £900 by a ticket agency. Official ticket prices for Euro 96 range from £15 to £75 for first round and quarter-final matches, from £40 to £90 for the semi-finals, and from £50 to £130 for the final. The only legal outlets for tickets in the UK are the FA, the football clubs staging the games, Keith Prowse and Sports World, the official corporate hos-

pitality agencies. Some agencies in the UK are authorised to sell tickets on behalf of foreign federations but only to foreign nationals. At the start of this week the FA said only 140,000 of the 1.4m tickets were left unsold. Police officers representing all 16 competing countries are due to meet in London tomorrow to finalise an unprecedented international effort aimed at controlling violence. They will receive an updated intelligence report, based on one in March, which identified British, German, Dutch, and Turkish potential troublemakers.

Failure throws into doubt Europe's leadership of commercial space transport industry

Ariane 5 explodes as rocket veers off course

By David Owen in Paris

Europe's leadership of the \$3bn-a-year commercial space transport industry was thrown into doubt yesterday when the new Ariane 5 rocket exploded 40 seconds into its maiden flight from French Guiana. The rocket, the largest built in western Europe, was destroyed by ground control after it veered off course. The launch, which cost an estimated \$500m and rained flaming debris near the European Space Agency's launch centre, was not insured, according to agency officials. The rocket was carrying four small scientific satellites intended to study the relationship between the earth and the sun.

The failure will deal a severe blow to Arianespace's hopes of continuing to dominate the increasingly competitive market in commercial satellite launches. In recent years, the French-based group - whose 53 European shareholders comprise many of the companies which help build the Ariane rockets - had taken about 50 per cent of this market, which was once dominated by the US. But a string of new competitors - involving many of the biggest names in the US defence and aerospace sectors, including Boeing and McDonnell Douglas - is expected over the next two years. Analysts expect competition to intensify further early in the next century when they predict a temporary decline in demand for



The Ariane 5 rocket takes off... 39 seconds later it explodes... the debris falls to earth

satellite-launching services. Space officials had no immediate explanation for yesterday's failure, but said a commission of inquiry would report its preliminary findings within eight days. Among possible explanations from experts watching the launch were a failure of the attitude control system; failure of one of the booster rockets leading the craft to spin out of control; some other failure which led safety officers to abort the mission as the rocket veered off course. Space officials promised to press ahead with the project. Under the original timetable, a second Ariane 5 flight was

planned for the autumn, with the first commercial launch set for early next year. Mr Charles Rigot, Arianespace chairman, said the failure was "a disappointment, but... I know we must always bounce back after a disappointment". He indicated the next launch of Ariane 4, the smaller rocket which Ariane 5 is scheduled to replace after a three-year transition phase, was still expected to take place on June 12. Mr Francois Fillon, the French space minister, said the government's confidence in the builders of Ariane 5 "remains total". Nasa, the US space agency, expressed its sadness at the fail-

ure and said it was convinced its European counterpart would "determine the causes". ESA officials have said in the past that Ariane 5 is theoretically much safer than Ariane 4, having a risk of one possible failure every 70 launches, compared with one every 15-20 launches with the smaller rocket.

The build-up to the launch took 11 years and cost \$7bn. The new rocket, which is designed to be able to launch two heavy communications satellites at a time, has little in common with its predecessor.

Explosion shatters Ariane's hopes, Page 6

PC makers agree merger scheme

By Louise Kehoe in San Francisco and Michio Nakamoto in Tokyo

NEC, Japan's leading personal computer maker, has agreed to merge its non-Japanese and non-Chinese PC operations with those of Packard Bell, the unprofitable leader of the US home PC market. The companies presented the deal as the formation of a global PC giant with potential combined revenues of about \$8bn, making it the world's fourth-largest PC manufacturer after Compaq Computer, International Business Machines and Apple Computer. The deal appears also to be aimed at improving Packard Bell's financial performance and providing NEC with an insurance policy against the day when its Japanese language proprietary system can no longer compete effectively against international systems.

In April, NEC invested \$283m in Packard Bell, raising its 19 per cent stake to an effective 40 per cent, including preference shares. At the same time, Groupe Bull of France also acquired a 19 per cent stake in Packard Bell, through the transfer of Zenith Data Systems, its struggling PC

Continued on Page 16
Lex, Page 16

Bankers prepare to discuss rescue package for KHD

By Michael Lindemann in Bonn

The outline of a rescue package for Klockner-Humboldt-Deutz, the German engineering group which is struggling to stave off bankruptcy, emerged as German and international banks prepared for a meeting today to decide the group's future. However, it remained unclear whether a rescue attempt would succeed because KHD, which has uncovered hidden losses of DM650m (\$427m), refused to say whether Mr Anton Schneider, its chief executive, had been able to persuade three of KHD's clients in Saudi Arabia to waive penalty payments on contracts for cement plants. The government of North Rhine-Westphalia, the north-western state where KHD is based, yesterday agreed to sign a letter of intent to buy KHD properties worth DM680m. The city of Cologne, which is home to KHD and stands to lose up to 5,000 jobs if the group goes bankrupt, has agreed to pay the

same amount so that the two purchasers could together put up DM178m to buy properties in Cologne, Mannheim and a number of other sites, which KHD would then rent back. Mr Wolfgang Lieb, a spokesman for the state government, said he expected the property purchase to conform to European Union guidelines. Officials said Deutsche Bank would shoulder most of the unspecified rescue package, contributing DM650m. Press reports suggested that debts worth DM300m would be forgiven and that the bank would inject fresh funds worth DM250m. Deutsche Bank declined to comment. KHD's workforce, which numbers 9,425 at several plants across Germany, is prepared to take a wage cut, work longer and forgo part of their pension entitlement in order to save "over DM100m" which would go towards the rescue package, executives said. Other banks which are members of the KHD consortium, including Dresdner Bank and

Bayerische Vereinsbank, are expected to be asked to forgo interest payable on loans to the company, which according to press reports total DM190m. KHD said it planned a press conference at 2pm in Frankfurt today to "present details of a restructuring concept following the irregularities and manipulations at KHD Humboldt Wedag", the group's subsidiary which specialises in cement plants. Humboldt Wedag had made bids for cement plant contracts in Saudi Arabia in recent years which were at least 20 per cent below market prices. As bankers prepared to discuss the viability of a rescue, press reports suggested that KHD faced losses of DM300m, considerably higher than the DM650m first reported last week. However, neither the company nor Deutsche Bank, which owns 47.7 per cent of KHD and has co-ordinated the rescue attempts, would comment on the higher losses. "Talks are still taking place," one executive said.

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Finnish markka on course for ERM

Parliamentary vote last night would clear way for government to seek early membership

By Hugh Carnegy in Stockholm

Finland's parliament was last night set to approve changes in the country's currency laws, clearing the way for the markka to join the European exchange rate mechanism, and fuelling speculation that the government may soon seek such a move.

The recent relative stability and strength of the markka coupled with Finland's low inflation outlook and current account surplus, have led many economists and market analysts to predict a Finnish move into the ERM in preparation for joining the planned European monetary union in 1999.

Mr Paavo Lipponen, the Social Democratic prime minister, reiterated earlier this week his belief that Finland should be among the first members of ERM. "When ERM is born, it is best that Finland be among the first to join because ERM will then become an economic and political reality," he told a trade union conference.

On the same day, Mr Sauli Niinistö, the Conservative finance minister in the left-right coalition, said he believed pressure from Finland's European partners would be such that it would be necessary for the markka to join the ERM if the country was to qualify for ERM.

The qualification criteria outlined in the Maastricht treaty foresee two years in the ERM for potential ERM participants before ERM membership is decided in 1998. Mr Niinistö's comments implied Finland would have to join the mechanism this year.

A technical obstacle was the wording of the currency laws which were framed to enable the markka to be linked to the Ecu, as it was in June 1991. The link was short-lived as a crippling recession forced Finland to float its currency in September 1992. Once signed by President Martti Ahtisaari, the reworked new currency laws will free the government to join the ERM.

The markka has been floating since the 1992 break with the Ecu, but has strengthened significantly over the past 18 months as Finland's public finances have been brought under control in preparation for ERM. Inflation is set to be just 1 per cent this year and interest rates have tumbled.

The Swedish krona is also widely seen in financial markets as approaching the conditions for ERM membership. It rose to its highest level against the D-Mark yesterday since December 1992, reaching SKr4.57, following the 12 cuts in the key short-term "repo" rate by the central bank this year. The rate was cut yesterday by 0.2 percentage points to 6.3 per cent.

However, the Swedish Social Democratic government insists ERM membership is not a vital condition for ERM membership and has repeatedly denied it intends an early entry.

Bonn says Russia easing Nato stance

By Bruce Clark in Berlin

Germany yesterday strongly urged its fellow Nato members to take Russia's security interests into account, and claimed that Moscow was softening its opposition to enlarging the alliance.



Primakov (left) and Solana in Berlin yesterday, seeking better Russia-Nato relations

But senior US and French officials said Russia had signalled a change of tone, though not of substance, in its attitude to Nato at a meeting in Berlin of the western alliance and its former adversaries.

Chancellor Helmut Kohl said a new relationship between the alliance and Russia should "form the core of the future European security architecture". Russia and Ukraine "must be taken into consideration", he said, while reaffirming that he viewed as "legitimate" the desire of some ex-Communist states to join Nato soon.

Mr Kohl, underlining his country's determination to find a formula for Nato expansion that would avoid alienating Moscow.

Mr Klaus Kinkel, the German foreign minister, said his Russian counterpart, Mr Yevgeny Primakov, had told the Nato meeting that Russia "was not against enlargement in principle" and it understood some countries wanted to join.

According to Mr Kinkel, the Russian minister went on to say that his country's main objection was to the possible establishment of Nato structures near its own borders.

US diplomats gave a similar assessment. British officials said Mr Primakov had expressed appreciation of several points in an announcement, issued by Nato ministers on Monday, which called for a more flexible alliance, adapted to a post-cold war world.

Britain wants an upgrading of Partnership for Peace, the Nato-inspired military co-operation programme, in the hope that Nato can maintain a close relationship with these ex-Communist states that do not join the alliance.

Greece reins in forex borrowing

By Karin Hope in Athens

Greece's central bank yesterday took steps to restrain foreign currency borrowing by Greek companies and consumer lending to individual Greeks. It was responding to a 30 per cent rise in commercial bank loans to the private sector in the first four months of this year.

The compulsory reserve requirement for commercial banks has been raised from 11 per cent to 12 per cent of deposits, and all foreign currency assets and liabilities are to be included in the reserve requirement.

Spain cuts its key interest rate

By Karin Hope in Madrid

The Bank of Spain yesterday kept a step ahead of market expectations by announcing a surprise quarter-point cut in its benchmark interest rate from 7.5 per cent to 7.25 per cent, bringing it to its lowest level in recent years.

The reduction, the fifth since the beginning of the year when the rate stood at 9 per cent, came as a boost to the centre-right government after a cool response in financial circles to its plans for curbing budget expenditure.

Azeri oil deal worth \$4bn signed

By Karin Hope in Baku

A consortium of multinational oil companies, including Iran's state oil company, yesterday signed a \$4-billion deal to exploit the Shakh-Deniz oil and gas deposit off Azerbaijan's Caspian Sea coast, the second largest in the ex-Soviet republic.

The consortium is led by British Petroleum and Norway's Statoil, who will control 51 per cent through a joint venture. The deposit is estimated to contain 4bn cubic metres of natural gas and 200m tonnes of natural gas condensate and oil.

France Télécom strike weakens

By Karin Hope in Paris

Protests by France Télécom employees against the partial privatisation of the state-owned utility appeared yesterday to be petering out, when only a third of its staff responded to a strike call. The response to similar strikes was 75 per cent of the utility's 150,000 employees last December and 45 per cent last month.

Union leaders attributed the decline in strike turnout to concessions by the government that guaranteed the civil servant status of existing employees. The French parliament is now debating bills to deregulate the telecommunications market in 1998, with up to 49 per cent of France Télécom to be sold off to employees and investors.

Czech politicians start to pick up the pieces

Calm is returning after the turmoil of last week's inconclusive election, writes Vincent Boland

The quiet hum of a functioning country was still discernible yesterday in the airy corridors of government in Prague. A degree of calm returned to Czech political discourse and even to the financial markets as the inconclusive outcome of last week's general election sank in.

Faced with the task of extricating the Czech Republic from the gridlock created by the loss of Mr Vaclav Klaus's parliamentary majority after the poll, the country's polarised political parties began a tentative search for that vaunted Czech quality - compromise.

Mr Klaus and Mr Milos Zeman, the opposition Social Democrat (SSD) leader, and in effect the big winner in the election, were still keeping a careful distance. They must decide the immediate political future, and both know they will have to talk some time, but not just yet.

President Vaclav Havel caused some surprise on Monday when he did not ask Mr Klaus to form a new government immediately. Yesterday, he was strongly attacked for delaying by the leading pro-Klaus daily, Mlada Fronta Dnes. But Mr Jiri Pehe, an analyst at the Open Media Research Institute, said Mr Havel was wise to wait.

If Mr Klaus were to bring a minority administration before parliament too soon it would almost certainly be defeated by a united opposition, he said. "That would cause real instability rather than the simple deadlock we have now."

Mr Zeman's claim that he would not support Mr Klaus as prime minister has still to be tested. But yesterday there was speculation that the price of that support - which the government might be willing to concede - was to appoint the SSD leader chairman of parliament.

Mr Klaus's immediate task, however, is to regroup his outgoing centre-right government, which won 99 out of 200 seats in the new parliament, on the assumption that he will be the first to be asked to form a new administration. These talks will be complicated by the need to bear the Social Democrats in mind, because opposition support will be essential to its survival. The SSD won 61 seats and the combined opposition won 101.

However, the coalition partners - the Civic Democratic party (ODS), the Christian Democrats (KDU) and the Civic Democratic Alliance (ODA) - will have to paper over many policy differences that were increasingly apparent before the election and in their separate campaigns.

Several times in the past 18 months their old coalition seemed close to breaking point, but the commanding position of the ODS and Mr Klaus's authority and occasional compromises kept it intact. And many observers noted that the three parties spent as much time on the campaign trail highlighting their own differences as in attacking the left.

The new Czech parliament

The parties

- ODS: centre-right.** Leader Vaclav Klaus likely to be asked to form new government. Party has strong record on economic reform and will insist that Mr Klaus remain prime minister.
- KDU: centre.** Partner in outgoing coalition. Restoration of Catholic Church property - opposed by most other parties. Links with the past rule out any constructive role though desperate to enter mainstream of Czech politics.
- ODS: centre-right.** Partner in outgoing coalition. Strongly in favour of economic reforms but also disappointed. Will push for less restrictive monetary policy and possible small privatisation, as well as other cabinet seats.
- Republicans: extreme right.** Militantly anti-gay and anti-German. Gained in election, exploiting fears over crime and "German" takeover. Despite early and partial support, anti-privatisation and anti-foreign investment stance.

The parliament: 200 seats

- Christian Democrats (KDU) 18 seats
- Social Democrats (SSD) 61 seats
- Communist party (KSCM) 22 seats
- Civic Democratic party (ODS) 99 seats
- Civic Democratic Alliance (ODA) 10 seats
- Republicans 10 seats

Mr Jiri Weigl, chief adviser to Mr Klaus, said yesterday that the partners were confident they could regroup. "There is a feeling of common ground among the coalition partners," he said. The question was whether it would find support from Mr Zeman. "Everybody has learned a little bit" from the election result, Mr Weigl said.

A paradox of the election result is that while the three-party coalition increased its overall vote by about 2 points, to 44 per cent it won six seats fewer than in the last election in 1992. This is because of a sharp fall in the number of votes cast this time for parties that did not win the minimum 5 per cent necessary to get to parliament.

But that, and the fact that the unreformed Communists were the only party to lose substantial support in the election, is little consolation to Mr Klaus.

France and Germany try to settle differences over cross-border competition

Move to open EU's electricity markets

By Neil Buckley in Brussels and Judy Dempsey in Berlin

Germany and France will today try to break a four-year deadlock over proposals to open the European Union's electricity markets to cross-border competition. Their ministers will meet in Dijon as part of a regular series of bilateral summits. But the task facing the two countries - whose differences have stalled attempts at an EU-wide agreement - is more complex than they expected when EU ministers agreed a framework in principle last month.

Today's meeting was envisaged as a discussion on the extent of liberalisation and the timetable. Concern is mounting, however, that any deal could be imperilled by an issue they thought had been settled: last month's decision that member states should be allowed to select one of two models of market access: "third party access", favoured by Germany and the UK, where customers (end-users or distributors) can conclude contracts directly with foreign electricity suppliers.

The "single buyer" system, supported by France, Benelux and Greece, where a designated national electricity buyer enters into contracts on behalf of its customers. German and British electricity companies are strongly opposed to this, arguing that allowing two systems of market opening will be unworkable and unfair.

The UK, which, with Scandinavia, has gone furthest in liberalising its energy sector, has been lobbying German officials not to accept it. German electricity companies, whose own monopoly of domestic supply and distribution will be weakened by legislation currently being drafted, have also been lobbying Bonn.

"This proposed compromise defies all economic rationale," said Mr Christoph Hilz, senior energy analyst at RWE-Energie, Germany's largest electricity company. "There is no place in Europe for two different energy systems. The single buyer system is far from opening up the market."

France is determined to defend the single buyer model, which would allow Electricité de France (EDF), the state-owned utility, to retain control of access to the national grid. Countries adopting the third-party access option would be opening their markets fully to French companies.

France and EDF argue that the single buyer system does not impede access, and will lead to better long-term management of energy resources and policy. Differences over the two systems threaten to reopen the whole debate about the liberalisation framework agreed in Brussels last month. That envisages equal market opening in all countries, increasing in stages over a set period, with states allowed to

impose obligations relating to safety and environmental matters on electricity companies. The Italian presidency last month proposed that 25 per cent of the market - accounted for by the biggest electricity users - would open initially, rising to 30 per cent over nine years. Germany wants the market to open further and faster; France wants more restricted opening with a longer timescale. A flurry of meetings between French and German officials is said to have gone some way towards bridging the gap, although the sensitivity of the negotiations is such that neither side will reveal the figures now on the table. If they can reach agreement most other countries are likely to support the plan. Since it requires only a qualified majority to be adopted by the council of ministers, it would be unaffected by UK non-co-operation in protest over the EU ban on beef exports, which only involves decisions requiring unanimity.

Economic Watch

Austrian jobless rate falls

Austria's unemployment rate eased to 3.7 per cent in May from 3.9 per cent in April, but was up slightly from an adjusted 3.6 per cent a year ago, the labour office reported yesterday. The unadjusted number of unemployed stood at 207,879 last month, down 12.4 per cent from April and 7.7 per cent higher than in May 1995. The government took credit for the improvement in the month and attributed it to job-creation measures and public works projects. Economists, however, pointed to a 22 per cent drop in job vacancies as a bad sign. Austria has the second-lowest unemployment rate in the European Union after Luxembourg, but the rate has edged up steadily over the past year, with economists predicting jobless rates of up to 5 per cent in the next few years. The unemployment figures appear particularly low to Austrians, who are used to higher figures from a different calculation method. The government has now adopted the EU method, based on surveys, rather than actual registrations at unemployment offices. Eric Fry, Vienna

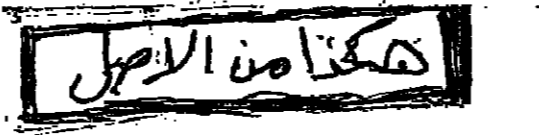
Swedish central bank cuts its repo rate from 6.5 to 6.3

The Swedish central bank cut its repo rate from 6.5 to 6.3 per cent yesterday. It was the twelfth cut since January.

Swiss retail sales fell 1.3 per cent in real terms in April from a year earlier. In March, retail sales fell 2.3 per cent.

Swiss retail sales fell 1.3 per cent in real terms in April from a year earlier. In March, retail sales fell 2.3 per cent.

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Bulgarian president loses primary poll

By Theodor Troev in Sofia

Bulgarian President Zhelyu Zhelev has been heavily defeated in his party's week-end primary to choose a candidate for the presidential election scheduled for the autumn, according to the official result released yesterday.

Mr Petar Stoyanov, 44, and a little-known lawyer, will be the candidate for the Union of Democratic Forces (UDF) which is presently in opposition to the governing Bulgarian Socialist party (BSP) in the country's parliament.

Mr Zhelev, 61, a dissident philosopher under the communist regime of Todor Zhivkov, was elected Bulgaria's first post-communist head of state in 1990.

He said last night he would abide by the result, withdraw his candidacy and support Mr Stoyanov. "The poll shows that Bulgarian society wants change," he said.

The Central Electoral Commission said that Mr Stoyanov won 56 per cent of votes cast against President Zhelev's 34 per cent. Around 850,000 Bul-

garians took part in the primary, exceeding the expectations of the organisers who described it as a triumph for the Balkan country's democracy. All Bulgarian adults - some 6.5m people - were entitled to take part in the election, but supporters of the Socialists and other leftwing groups largely shunned the poll.

The UDF is seeking to make the presidential campaign into a springboard for early parliamentary elections.

Yesterday it joined other opposition parties, the People's Union and the ethnic Turk Movement for Rights and Freedoms to call for a vote of no confidence in the Socialist government of the prime minister, Mr Zhan Vidanov, over its handling of the country's economic crisis.

Mr Stoyanov has been prominent in recent days at protest rallies calling on the government to resign and claiming that it was unable to carry out urgently needed economic reforms. He has blamed the government for the current shortages of bread and petrol.

"Bulgaria is on the brink of catastrophe. There is no hope, no fuel, no bread," he said.

The opposition is unlikely to win the confidence vote, which is expected to be held next week, as the Socialist government has an absolute majority.

Bulgarians have been hit hard in recent weeks by steep price rises and by shortages of bread and fuel, which have followed in the wake of drastic increases in interest rates aimed at averting a collapse in the currency. The government, in power for 17 months, increased value added tax last week by four percentage points to 22 per cent.

It also announced further rises in import taxes and excise duties and an 80 per cent increase in fuel prices to bolster the state budget and to raise funds to pay for reforms agreed with the International Monetary Fund.

The tax increases, which are expected to raise the rate of inflation by 6 per cent a month, have led to anti-government protests by thousands of pensioners, trade unionists and taxi drivers in the capital.



Look of resignation: President Zhelyu Zhelev of Bulgaria voting in last weekend's US-style primary election which he lost

Radical tax reforms urged in France

By Andrew Jack in Paris

The French government should cut the top rate of income tax from 56.8 per cent to 40 per cent and substantially reduce the number of exemptions, according to a high-level report submitted to Mr Alain Juppé, the prime minister, and released yesterday.

The report, by a group of five senior civil servants, contains a strong indictment of the French tax system and calls for a series of radical changes which are likely to be controversial.

It calls for the lowest-paid to be exempt from tax, for the existing sliding scale to be reduced to six bands, for higher income earners to be taxed on family allowances and for the lower income tax ceiling to be balanced by eliminating the practice of deducting 20 per cent from an employee's earnings before calculating tax.

Ministers are urged to consider greater harmonisation of professional tax - levied on companies by a range of different levels of local government

largely on the basis of the number of staff employed and investment undertaken.

The report says that meaningful tax reform cannot take place without a reduction in public expenditure; that spending should be balanced by tax revenues; and that excessive simplification of the system could risk triggering injustices.

It criticises proposals being discussed at the European Commission for a switch in the "destination-based" system of value added tax to one levied at the point of origin of the goods or services being sold. It says such a system would create substantial conflicts.

Mr Juppé stressed on Monday ahead of the report's publication that he would not be bound by its conclusions, but his statement echoed a number of its recommendations.

His proposal for a new universal health insurance charge triggered an angry response from French unions, with Force Ouvrière calling it a precursor to the privatisation of the medical system and the Communist-backed Confédération Générale du Travail

describing it as "demagogic".

Mr Dominique de la Martinière, who headed the group which wrote the report, yesterday said on French radio that his recommendations would be "torn to pieces" over the next few months by pressure groups and politicians, and be "thrown to the dogs".

His report says taxes and other charges now represent a record 45 per cent of gross domestic product, the highest proportion in any large developed country. It warns of the sharply growing burden of social expenditure, notably in health care, and of the danger of the more rapid growth in real wages of public sector workers.

It says the tax system has lost its elasticity, with each rise in charges accompanied by a sharp growth in the number and value of tax deductions claimed as people adopt "survival tactics". It also calls for modification to the incentives payable on life assurance products, with renewed emphasis on encouraging the country's nascent pension system.

Unofficial local election results suggest that only one main city was won

Voters shun Romania's ruling party

By Virginia Marsh in Budapest

Romania's governing Party of Social Democracy (PDSR) was last night bracing itself for a humiliating defeat in the current round of local elections as unofficial results from Sunday's first round suggested it had won only one of the country's main cities.

The elections, the first nationwide polls for nearly four years, are an important test for Romania's many political parties ahead of parliamentary and presidential elections due in the autumn.

As results continued to come in, it appeared the PDSR, the rump of the party of former senior communists which has held power at the national level since December 1989, had won outright the contest for mayor in only one large city - Galati, a steel town in eastern Romania.

candidate won an absolute majority, PDSR representatives did not finish among the top two candidates who will go to a run-off in the second round on June 16. In the ethnically-mixed Transylvanian city of Cluj, official results

showed the party - whose minority government is considered mediocre and corrupt by many Romanians - had polled just 4.3 per cent in the contest for mayor.

The incumbent, Mr Gheorghe Fumar - an extreme anti-Hungarian nationalist leader whose party is the PDSR gov-

ernment's junior coalition partner - was re-elected after winning 50.7 per cent of the vote.

The PDSR appeared to have fared better in small towns and in the countryside, home to nearly half Romania's

23m population and where the party is traditionally strongest.

The centre-right Democratic Convention (CDB), Romania's main opposition group, topped the polls in many important cities, including Bucharest. Liberal parties, once part of the Convention, and the centrist Social Democrat

Union (USD), led by Mr Petre Roman, the former prime minister, also performed well, as did a neo-communist parliamentary party.

The CDB was the main winner of the last local elections in early 1992 but later that year lost the general elections which were delayed for several months, in contravention of the constitution, to allow the PDSR's predecessor party to sort out its internal problems.

The PDSR, which did not exist in its present form at the time of the last local polls, said yesterday it still believed its candidate, Mr Ilie Nastase, the former tennis star, would win the contest for mayor of Bucharest in the second round.

The party had hoped to win the capital as well as several regional cities to boost its chances in what is expected to be a tightly contested election in the autumn.

Philip Morris launches pro-smoking campaign

By Frederick Oram, Consumer Industries Editor

Philip Morris, maker of Marlboro cigarettes, yesterday launched a pan-European campaign against smoking bans and other attempts to reduce "smokers' rights".

Its central claim, unveiled at a press conference in London, was that there was no statistical evidence that cigarette smoke can cause cancer in non-smokers who live and work with smokers.

"There is a constant drumbeat on the issue that my cigarette smoke is hurting you," said Mr David Greenberg, European vice-president of public affairs for Philip Morris, the world's largest cigarette

maker. An extensive newspaper advertising campaign across Europe over the next six weeks will argue that 32 of the 40 published studies on passive smoking show no significant correlation between passive smoking and increased risk of lung cancer.

Philip Morris said a study by the US Environmental Protection Agency, the report most widely quoted by the anti-smoking lobby, only found a correlation of 1.18. A factor of one equalled no increased risk.

By comparison, smokers ran a three to 22 times higher risk of contracting lung cancer than non-smokers depending on factors such as their consumption rate. Anti-smoking campaigners argued, however,

that Philip Morris's focus on lung cancer ignored the wider impact of passive smoking.

"Smokers only inhale 15 per cent of their cigarettes' smoke. The rest is in the air which equals a helluva lot of toxins, said the British Medical Association. "The real cost of passive smoking is not lung cancer but the effect on children and people with asthma."

Philip Morris's advertising blitz last year against smoking bans around Europe drew an angry response from the European Commission. The company declined to disclose the cost of the latest campaign "but we feel a responsibility and desire to speak out on behalf of 97m smokers in Europe."

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NEWS: THE AMERICAS

World's biggest carmaker plans appeal after calling Alabama court's award 'outrageous'

GM vows to fight \$150m injury award

By Richard Waters in New York

General Motors vowed yesterday to fight a \$150m damages award handed down by a jury in Alabama, one of the largest personal injury awards ever made against a US manufacturer.

The jury, in a circuit court hearing, ordered the world's biggest carmaker to pay \$50m in actual damages and \$100m in punitive damages to Mr Alex Hardy, who was severely injured five years ago when a GM sport utility vehicle he was driving crashed.

Mr Hardy claimed the accident was caused when the rear axle of his

Chevrolet Blazer broke, and that his injuries were made worse when a door latch gave way and he fell from the vehicle.

GM continued to maintain yesterday that Mr Hardy was asleep at the wheel at the time of the crash, and that the broken axle had been a result of the crash, not the cause. Also, it claimed that Mr Hardy had been thrown through the windscreen because he was not wearing a seat belt, rather than falling from the door.

The jury award comes less than a month after the US Supreme Court

overturned a punitive damages award made by another Alabama jury which had been widely held up by manufacturers as a sign of a legal system run amok. In that case, the jury had awarded \$4m in punitive damages, later reduced to \$2m, against BMW for selling a car as new after retouching its paintwork.

General Motors called the latest award "completely outrageous" and said it would appeal. It also called on lawmakers in Washington to think again about imposing national standards to govern personal injury awards.

While rejecting a complete overhaul of the tort law system, Congress recently approved a bill to limit some product liability awards. President Bill Clinton has steadfastly set his face against putting any new restrictions on jury awards.

The GM case is also likely to bring renewed pressure from manufacturers for reform of tort laws in the handful of states, including Alabama, whose juries have traditionally handed down the highest personal injury awards.

Mr Thomas Gottschalk, GM's general counsel, said Alabama "has a pattern of increasingly excessive

personal injury awards, driven largely by plaintiffs' lawyers who ignore hard evidence and play to the emotions of the jurors in a few carefully selected counties." The latest case, he said, was "the crowning example of a state tort system gone berserk."

Texas, another state known for its high personal injury awards, particularly by juries in a handful of poorer rural counties in the southern part of the state, recently passed legislation making it harder for plaintiffs to have their cases heard in jurisdictions likely to be more favourable to them.



Dole (left) and Clinton: squaring up on central election issues

Clinton, Dole line up for battle of taxes

By Jurek Martin in Washington

President Bill Clinton and Senator Bob Dole yesterday made taxation the focal point of their battle for the White House, each seeking to appeal to middle income Americans.

Mr Clinton, in a graduation speech at Princeton University, unveiled a new \$1,500 a year tax credit to help pay for tuition in the first two years of higher education. Students would have to maintain a B grade average to qualify and would lose the benefit if found to have used narcotics.

It would supplement his earlier proposed \$10,000 a year tax deduction for university fees which still languishes in Congress. The new initiative, estimated by the White House to cost \$8m over six years, would be financed by assorted revenue means, including the reinstatement of the lapsed departure fee on international air travellers.

Mr Dole visited a building site near Richmond, Virginia, to charge that Mr Clinton's refusal to support the constitutional amendment to balance the budget amounted to a hidden "stealth" tax on all Americans.

He told a rally not to believe what the president was proposing in Princeton and said "who knows what taxes he'll increase if re-elected." He ascribed the recent increase in mortgage rates, up about 1 percentage point to over 8 per cent so far this year, to Mr Clinton's economic policies.

Both the president and the majority leader, who confirmed yesterday he would leave the Senate next Tuesday after the vote on the balanced budget amendment, are being bombarded with advice to come up with more

radical tax positions.

For Mr Dole, the pressure comes mostly from rightwing Republicans keen to revive the "supply side" policies of the early Reagan administration. He recently met Mr Steve Forbes, his early primary opponent and advocate of the flat rate of income tax.

But the majority leader, is more comfortable stressing the virtues of a balanced budget and attacking Democratic "tax and spend" policies.

According to a report in yesterday's Wall Street Journal, Mr Clinton is also being advised by Mr Dick Morris, his controversial political consultant, to expose new tax cuts, mostly as a tactical means to push Mr Dole into even more radical tax positions.

But Mr Leon Panetta, White House chief of staff, and Dr Alice Rivlin, still budget director pending confirmation to the Fed Board, have urged the president to stay within existing budgetary confines.

Mr Panetta said last week it would be wrong "to engage in a bidding war on tax cuts." The greater political advantage, in this viewpoint, would be to hold the budgetary line and tempt Mr Dole into abandoning his doctrine of fiscal responsibility.

This jockeying for the tactical edge probably demises most Americans, according to the latest survey by the New York Times and CBS News. It found 49 per cent preferring to cut the budget deficit over lower taxes and 47 per cent favouring the other way round.

Even more to the point, only a tiny minority - 3 per cent if Mr Clinton is re-elected, 10 per cent if Mr Dole becomes president - expected their taxes to go down.

Argentina cracks down on tax evasion

By David Pilling in Buenos Aires

Argentina will struggle to meet fiscal targets agreed with the International Monetary Fund if it does not crack down successfully on the "national sport" of tax evasion, said Mr Domingo Cavallo, economy minister.

Launching a series of measures aimed at reducing the evasion of personal taxes, Mr Cavallo said: "We still have the levels of deficit that we had in the second half of 1994 and which grew in 1995."

There would need to be a "big increase" in collection of income and

wealth tax when returns are filed this July to help square the books, he said.

In an IMF deal reached last February, Argentina agreed to balance its budget in 1996, with an allowed deficit of up to \$2.5bn to be plugged by revenue from privatisations and the sale of concessions to manage nuclear and hydroelectric plants.

The treasury, which in the first quarter of 1996 was running a monthly deficit of nearly \$400m, is likely to miss its IMF target by \$4.4bn, according to Mr Pedro Lacoste of the

Alpha economic studio. Given an additional \$2bn shortfall at provincial level, the total deficit could reach \$6.4bn, or 2.3 per cent of gross domestic product, against 1.3 per cent in 1995, he said.

Among anti-tax-evasion measures to be adopted, Mr Cavallo said "certificates of good conduct" would be issued to those who had filed tax returns. Such certificates, which critics say would be bureaucratic and ineffective, would have to be presented when carrying out such transactions as the purchase of a house or foreign airline ticket. Those

that did not present their certificate would be investigated by the DGI internal revenue service, Mr Cavallo said.

Other measures include intensification of the so-called "information comb," a data base against which tax returns will be checked.

An inspectorate of black market labour will also be formed in an effort to incorporate the estimated 3m illegal workers into the official, tax-paying workforce.

Income tax and wealth tax only account for a fraction of the total tax

take, 70 per cent of which is made up of consumption-based taxes, principally value-added tax. VAT was last year raised 3 points to what Mr Cavallo admitted was the "elevated" rate of 21 per cent.

Mr Cavallo said the task of reducing tax evasion was "difficult and complex" and had failed on several previous occasions.

Spectacular raids by tax inspectors had often not been backed with adequate or properly presented information: of \$800m worth of tax evasion discovered, only \$50m had actually been collected.

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CONSOLIDATED BALANCE SHEET 1995	US\$m	% Change vs. 1994
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TOTAL ASSETS	34,100	+ 3.2
CUSTOMER DEPOSITS	20,000	+ 7.3
LOANS	17,000	+ 4.3
NET INCOME	558	+ 5.8

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Parent Bank's figures as at 31st December 1995

	US\$m	% Change vs. 1994
SHAREHOLDERS' EQUITY	1,430	+ 5.6
TOTAL ASSETS	29,900	+ 3.4
CUSTOMER DEPOSITS	18,400	+ 7.0
LOANS TO CUSTOMERS	15,300	+ 7.7
NET INCOME	101	+ 22.1

(US\$ 1 = Lit. 1,584.72 as at 31st December 1995)

one of Italy's leading securities and stockbroking-houses, also prospered. Meanwhile, overseas, a new Representative Office in Moscow was added to those already existing in Beijing, Brussels, Hong Kong and New York, and a new office will soon be opening in Manila.

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Balaguer in pact with arch-rival

By Caruato James

Political tension is rising in the Dominican Republic following a pact by the country's veteran

politicians aimed at preventing the leader of last month's first round presidential elections from winning a run-off vote at the end of this month.

The move has been described as "racist" by Mr José Francisco Peña Gómez, the black leader of the social democrat Revolutionary party, who got most votes in the first round.

Mr Joaquin Balaguer, the conservative president retiring after dominating the country's politics for 30 years, and Mr Juan Bosch, his arch-rival and once an avowed Marxist, have ended decades of animosity in agreeing to set up a coalition aimed at stopping Mr Peña Gómez from becoming president in August.

Mr Balaguer, who founded the Reformist party, and Mr Bosch, founder of the Liberation party, both octogenarians, have announced the formation of the National Patriotic Front, a coalition which will support Mr Leonel Fernández, the Liberation party's candidate in the run-off vote.

Mr Fernández received 38 per cent of the votes in the first round, coming second to Mr Peña Gómez who got 45 per cent, not enough to give him outright victory. The failure of any candidate to get a majority forced the contest into the second round.

Mr Balaguer said he and Mr Bosch had created the coalition to support Mr Fernández, in order to ensure that the presidency does not fall into "hands which are not necessarily Dominican".

Mr Peña Gómez has frequently been the subject of racial slurs from his detractors, who stated, in clear

error, that he is Haitian and not a Dominican. The Dominican Republic and Haiti share the island of Hispaniola.

Mr Peña Gómez has attacked the creation of the coalition to support Mr Fernández, saying it was an attempt by the old guard to cling to the patronage of the Reformists. "This racist

move with the creation of the Patriotic Front will be resisted," he said in a 90-minute radio broadcast on Monday night. "It is nothing more than an effort to stop a man because of his colour, and because he is the son of the poorest sector of the country."

The effort to prevent Mr Peña Gómez from becoming president has further split the Reformist party. Mr Jacinto Feynado, the Reformist candidate for the presidency, was not supported by Mr Balaguer and other party leaders.

Political tension is rising in the country of 7.5m people. Party political clashes since February have caused 11 deaths, and diplomats and businessmen in Santo Domingo, the capital, said yesterday that they expected more violence.

"There are already reports that militants of the Revolutionary and Liberation parties are preparing for more fights," said one business leader. "Mr Fernández wins the run off, Peña Gómez's supporters will not take it lying down." Mr Balaguer is retiring as part of electoral reforms which followed his controversial win by less than 1 per cent of the votes in elections two years ago.

Foreign observers and local parties said the president had retained office by extensive fraud. Pressure from the US led to the president's retirement and the holding of elections mid way in his term.

Oil states prepare to draw Iraq back into Opec fold

By Robert Corzine in Vienna

Members of the Organisation of Petroleum Exporting Countries will begin deliberations in Vienna today on ways of bringing Iraq back into world oil markets without undermining prices.

A number of delegates who arrived in the Austrian capital yesterday were generally positive about the prospect of awarding Iraq a quota to accommodate exports that will be allowed under an oil-for-food plan agreed with the United Nations last month.

The agreement allows Iraq to sell \$2bn of oil over six months. That could result in 700,000 to 900,000 or so barrels a day of Iraqi crude reaching world markets within a few months.

The positive signals even came from officials of recent Iraqi enemies such as Iran and Kuwait. One Iranian delegate said it was time the suffering of the Iraqi people be relieved. But the question being asked by many delegates yesterday was whether Iraq could be accommodated at a time of rising over-production from Opec

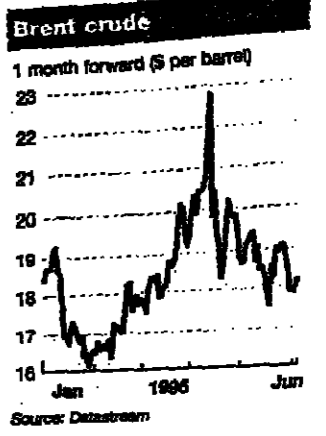
states such as Venezuela. "If you have over-production everything else is meaningless," said an Iranian official. A "meaningful" outcome from the meeting would need to include agreement on Iraq, a solution to large-scale quota cheating and a deal to support growth in oil demand among member states, he said. In recent days some delegates have suggested that the issue of cheating could be largely overcome by rising worldwide demand for oil. There have even been suggestions, for example, that

demand may prove strong enough not only to accommodate Iraq's partial return to the market, but also to allow for an increase in Opec's production ceiling of 24.5m barrels a day set in September 1993. Some demand forecasts put the sustained call on Opec as high as 26m barrels a day. "The market is absorbing almost every barrel produced without any major stock build in the main consuming countries," said a Gulf Arab official this week. Iran yesterday said it, too, saw rising demand for Opec oil, although Tehran offi-

cials suggested that it would average perhaps 25m barrels a day this year. But other delegates were less certain. "To meet a price target of \$16 to \$17 a barrel for the benchmark Brent crude over the next year you simply have to cut back hard on over-production," according to a delegate from one of the larger Gulf producers. He said oil prices could weaken sharply if 700,000 barrels a day of Iraqi crude was added to the market which is already absorbing up to 1.5m barrels a day in current Opec over-production.

There also appears to be uncertainty among the group over the output potential of non-Opec producers, such as the UK and Norway. Some delegates scoff at suggestions that such countries can continue to expand capacity as rapidly as in recent years. They also wonder about the validity of forecasts which show another sharp rise in non-Opec output later this year. "Where is it supposed to be coming from?" asked one delegate. "The North Sea? It's not there. From where else? Brazil, Mexico, China? It's just not there."

The issue of Venezuelan over-production is a top priority for some countries. But it is not clear how hard Saudi Arabia, Opec's largest producer, is willing to push the issue. There has been talk among some delegations of trying to avoid a confrontation with Venezuela. "We want to avoid a conflict about quotas," said one delegate. But others appear more determined that Venezuela be forced to concede publicly that it is "cheating on its quota," something which is so far resolutely denied.



Angola's rulers wake up to their own inadequacies

Problems are not all caused by civil war, writes Michela Wrong

The sacking of Angola's cabinet and the governor of the central bank by President José Eduardo dos Santos has confirmed what most Angolans suspected: that the government in Luanda is as much to blame for their plight as Mr Jonas Savimbi, head of the Unita rebel group.

In an attempt to tackle the worsening economic crisis, the president on Monday dismissed prime minister Marcelino Mopo and all his ministers and suspended foreign exchange trade.

For two decades Angola has been locked in civil war and the refusal by Mr Savimbi to recognise the government's legitimacy has provided the ruling party, the formerly Marxist Popular Movement for the Liberation of Angola (MPLA), with a convenient scapegoat.

How could the economy be restructured, the politicians argued, when the war required the maintenance of a large army, when much of the interior remained cut off from the

street children begging for alms. At night, much of the city is without electricity; water supplies were halted more than a month ago.

Last year's economic performance was the most disappointing on record, with Angola logging some of the worst socio-economic indicators in the world. Inflation hit 3,700 per cent and a fifth of the population relied on aid to survive. The national currency, the kwanza, now changes hands at 220,000 to the dollar, compared to 43,000 a month ago.

The fact that such misery is not shared by all - in particular an ostentatiously wealthy political elite that has profited from exchange controls and oil dealings - now constitutes the main threat to Mr dos Santos' presidency.

Always nervous at signs of popular discontent, the president cancelled a trip to Japan last month when he heard that youths in one of Luanda's poorest areas were planning a demonstration and that anti-

Angola: legacy of the conflict years

	1992	1993	1994	1995
GDP growth (%)	2.3	-25.0	8.8	10

Source: Angolan government; World Bank (source for 1995 inflation figures)

capital, when thousands of refugees needed support and when the lucrative diamond-mining areas remained firmly in Unita hands?

But with the laborious peace process presided over by the United Nations showing signs of achieving lasting peace, the weaknesses of the MPLA's position and the marked absence of a "peace dividend" are becoming obvious. The government's failure to see through structural adjustment reforms, which are being introduced with some success by other African nations, has been thrown into stark relief.

Diplomats recently warned that public dissatisfaction with official corruption and mismanagement had reached levels where a civil uprising, rather than second thoughts by a fickle Unita, constituted the biggest threat to peace.

Few visiting Luanda today would guess it is the capital of Africa's second largest oil producer, an offshore asset the government has been able to tap throughout the war.

The coastal city, still graced by the elegant buildings of the Portuguese colonial era, has become a symbol of third world decay, awash with rotting garbage and swarming with crippled fighters and

government pamphlets were circulating.

Mr Fernando Franco Van Dunem, named as the new prime minister by presidential decree, now has five days to form a new government. His mandate will be to revive reforms recommended by the International Monetary Fund and World Bank that have been repeatedly launched in the past, only to be undermined by official foot-dragging.

While Mr Van Dunem, the former speaker of parliament, is hardly regarded as a radical there are reasons to believe the attempt to move towards a free market economy will this time be embraced with more rigour.

Although the peace process is running behind schedule, at some stage this year a government of national unity, with key ministries allotted to Unita, is due to be formed. While Unita remained an out-cast rebel movement and the country was at war, the MPLA could appeal to Angolans' patriotism.

But now that Unita, which won 40 per cent of the vote in 1992 elections, is about to become a legitimate political player capable of trouncing the MPLA in future polls, the government can no longer afford a disappointing record.

Wife of jailed Nigerian leader is shot dead

The wife of Chief Moshood Abiola, the jailed Nigerian political leader, died in hospital yesterday after being shot in the head by gunmen while driving near her home, AP reports from Lagos.

There was no immediate indication of the motive for the attack.

Mrs Kudirat Abiola, 44, was an outspoken critic of the military government headed by General Sani Abacha. Her husband, a millionaire businessman who was widely believed to have won the 1993 presidential poll, was jailed on a charge of treason in 1994 after he proclaimed himself president.

In London, the British government called for Gen Abacha's government to investigate the killing promptly and thoroughly.

Witnesses said the gunmen opened fire on Mrs Abiola's white Mercedes-Benz yesterday morning as she was returning from a visit to Ifeju Ode, in Ogun state, an hour's drive from Lagos.

Witnesses said the car swerved off the road, and the gunmen moved in to fire at close range.

The car's windshield and back window were shot out, the witnesses added.

Mrs Abiola was reportedly detained for a few hours last month for allegedly possessing publications critical of the Abacha government.

It has been under intense international pressure to release Chief Abiola and scores of other political prisoners jailed since Gen Abacha's November 1993 coup.

Forex dealers move to limit settlement risk

By George Graham in Sydney

The world's largest foreign exchange dealers have stepped up efforts to control the risk of a breakdown in the \$1,230bn of payments that flow between them every day, and hope to have a central clearing house bank fully operational in less than two years.

The Group of 20, an association of leading international banks which between them handle around 30 per cent of global foreign exchange trading, estimates the cost of setting up the clearing house

bank at \$30m, and member banks believe it will not be difficult to raise this amount.

"There will not be an issue of money. You are not going to have a problem with 20 banks getting \$30m," Mr John Reed, chairman of Citibank, a member of the G20, told 130 top executives attending the International Monetary Conference meeting in Sydney yesterday.

Mr Reed said the project could be fully implemented from scratch in two years, "but there are some ways of not starting from scratch by bootstrapping on existing systems".

The G20 plan is for an instantaneous settlement system, linked to national payment systems such as the UK's CHAPS or the US Fedwire, in which a payment by one bank is immediately offset by a matching payment from another bank.

Members would have to pay money into their accounts each day, and transactions would be debited and credited throughout the day. If one member bank defaulted during the day, losses would be shared among other members.

Several legal issues remain

to be resolved, but a final decision on the project is expected this summer.

Central bankers have been encouraging the private sector to come to grips with the risks involved in the foreign exchange settlement system.

Because of differences between time zones and the operating hours of national payment systems, banks often pay their side of a foreign exchange deal before they have received any payment in return, and can therefore be heavily exposed if their counterparty collapses.

The 1974 collapse of Bankhaus Herstatt, a small Cologne bank, with \$620m of uncompleted trades sent shock waves through the financial system. Since then foreign exchange volumes have ballooned and a collapse today could be far more damaging.

Some commercial banks, however, believe the risks of a major settlement breakdown too remote to justify spending much money.

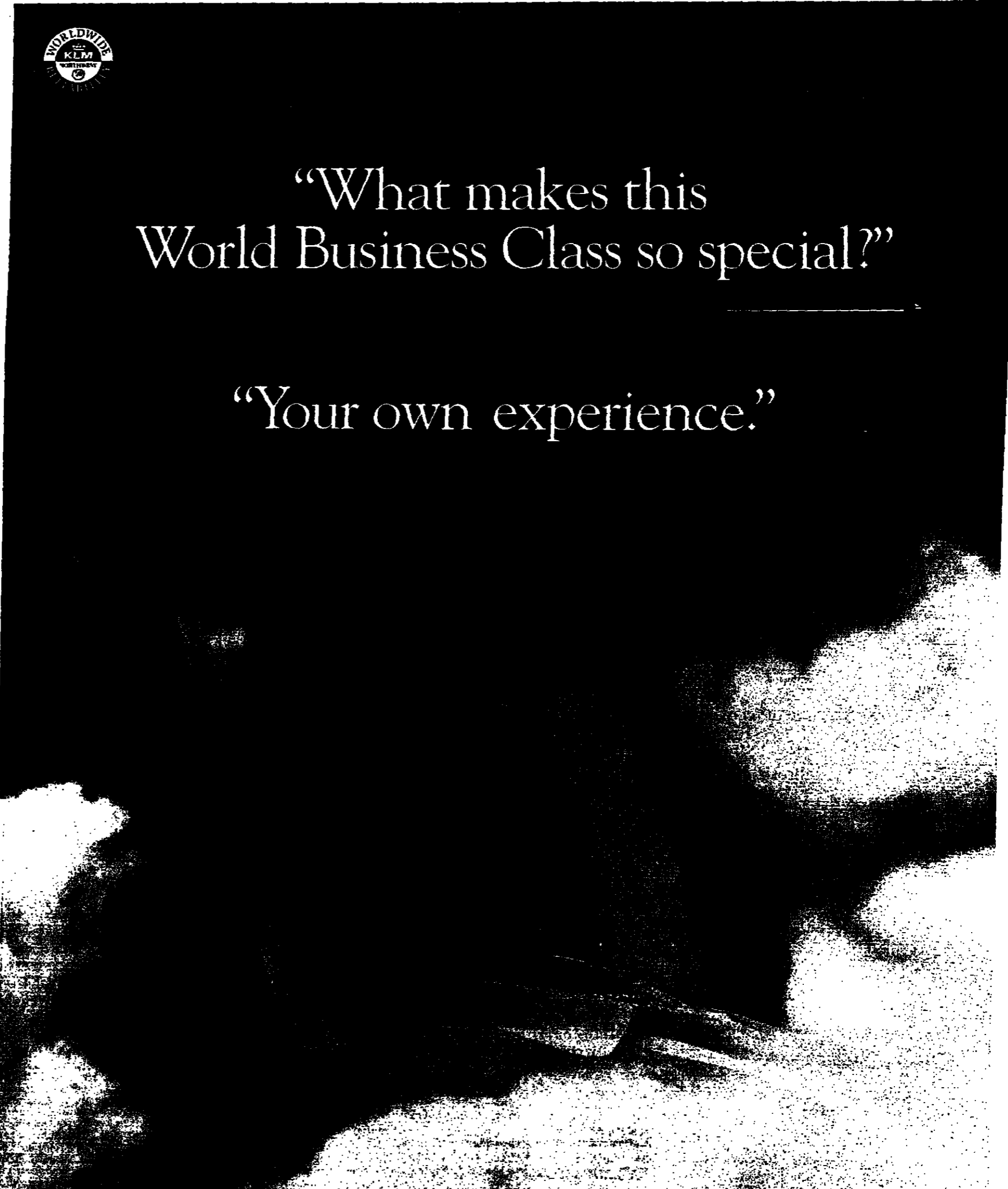
Mr Peter Cooke, chairman of the world regulatory practice of the Price Waterhouse accounting firm and a former

Bank of England regulator, said yesterday that he hoped this view did not prevail.

"Bigger banks than before can probably be allowed to fail than in earlier days, but it is quite another matter to say that the international financial marketplace can tolerate a major meltdown," he said.

Mr Reed said that, while the risks were small, they were large enough to be taken very seriously by the largest banks.

"The risk is not zero. It may be point zero, zero, zero, but there is a significant digit," he said.



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NEWS: ASIA-PACIFIC

Japan moves to appease finance critics

By Gerard Baker in Tokyo

The Japanese government once again disappointed critics of the country's bureaucracy last night with the publication of a set of half-hearted proposals aimed ostensibly at improving the conduct of monetary policy and financial supervision.

The plan, a draft document prepared by a policy committee of the ruling coalition, called for a few minor enhancements to the independence of the Bank of Japan from the powerful finance ministry. However, it was virtually silent on any plans to reform the ministry itself.

The lukewarm nature of the report suggested the move was an attempt to head off criticism of the government's handling of the country's financial crisis rather than a serious attempt at reform.

In the document, the governing parties call for the revision of a 54-year-old law which puts the central bank under finance ministry control. The most original idea was that of curbing the authority of the finance minister to dismiss senior central bank executives and supervise the bank's business.

But since the law permitting such powers has never actually been exercised, revision seems unlikely to make a substantial change to the relationship between the two institutions.

Other proposals would force the central bank to report to parliament on the conduct of monetary and financial questions, and require the bank and the ministry to consult each other on monetary policy, something that largely happens already.

It was not even clear when the proposals would be put before parliament. "The coalition parties are still divided over when to submit bills for revising the Bank of Japan law to parliament, so we will finalise the proposal next week," said Mr Shigeru Ito, a lawmaker who heads a coalition task force studying the feasibility of splitting up the ministry and dispersing its authority.

Bank of Japan officials have argued fiercely in recent weeks for greater independence from the finance ministry. Mr Yasuo Matsushita, the governor, has called for a revision in the law to bring it more into line with changing conditions in the nation's economy.

Public anger at the ministry has mounted recently following the collapse of eight financial institutions and a series of allegations of corruption by ministry officials.

Most criticism has been directed at the ministry's handling of the collapse of the country's housing loan companies, bankrupt under a pile of non-performing loans.

Cold comfort for war women

PM's apology clears way for compensation, writes Emiko Terazono

Japan's Asia Peace National Fund for Women, a "private" reparation fund set up by the government, was last night poised to sanction a comprehensive compensation deal for 200 so-called "comfort women" who provided sexual services for the Japanese Imperial Army during the second world war.

Its move follows prime minister Ryutaro Hashimoto's announcement this week that he would apologise to "comfort women". He acted in spite of pressure from some in his own Liberal Democratic party and rightwing extremists who insist the women were volunteers.

Mr Hashimoto's decision, in effect, cleared the way for the fund to press ahead with its compensation package which had already been delayed because of his foot-dragging.

Last month, the fund postponed a formal announcement of compensation because of the prime minister's equivocation, which has caused ill feeling among former "comfort women" and among Japanese promoters of the fund.

Mrs Mutsuko Miki, widow of former prime minister Takeo Miki and a leading campaigner for the "comfort women", resigned from her post as a fund-raiser for the fund last month after the prime minister refused then to write letters of apology on Japan's behalf.

"I was very disappointed by Mr Hashimoto's refusal to apologise and decided I could not work with him," said Mrs Miki, who is regarded as the conscience of the LDP, the largest ruling coalition member.



South Koreans in Seoul chant anti-Japanese slogans at one of a series of protests in recent years over 'comfort women'

The fund is likely to agree on a payment of ¥2m (\$18,500) each to the 200 women - in South Korea and other parts of Asia - though at talks last night there was division on the figure. Compensation by the fund, which was set up by the government last summer, is already behind schedule. It was supposed to start payments by the end of last year, but the lack of funds - it has

managed to collect only ¥340m - and haggling over how much should be paid to each claimant have delayed reparation.

Although the Japanese government in 1991 admitted official involvement in conscription of Korean, Dutch and Filipino women, it has maintained that its obligations were settled by the signing of peace treaties after the war. Mrs Miki believes interna-

tional treaties and apologies are separate issues. She also claims the Japanese government's denunciation of a recent report on "comfort women" by the UN Human Rights Commission, which called for direct government compensation, had also spurred her resignation.

Ironically, the departure of Mrs Miki, dubbed "Woman Prime Minister" due to her political influence during her husband's rule, seems to have helped rekindle debate and a push for a solution.

Despite this week's developments, the controversy is unlikely to go away. Members of the LDP oppose compensation because of the lack of official records on recruitment of "comfort women". Even historians' estimates of "comfort women" vary, ranging from 80,000 to 200,000. Mr Tadashi Itagaki, an LDP member, is reported to have said at a recent party meeting that wartime sex slavery was fabricated. Rightwing extremists have also campaigned against compensating former "comfort women".

Moreover, opposition over the fund has come from support groups of former "comfort women" demanding formal government compensation with an official apology. Some supporters allege Mr Bumbel Hara, the former upper house speaker who heads the compensation fund, had been involved in destroying official papers, including those concerning "comfort women" during his days in the home affairs ministry during the war - a claim he denies.

ASIA-PACIFIC NEWS DIGEST

Malaysia growth slows to 8.3%

Malaysia's economic growth slowed to an annual rate of 8.3 per cent in the first quarter of this year amid signs that consumer spending moderated but foreign investment projects were still being approved at a fast clip.

The 8.3 per cent growth rate was down from 9.2 per cent in the preceding quarter and 10.2 per cent in the first quarter of 1995. Malaysia has forecast 1996 gross domestic product growth will be 8.3 per cent, against 9.5 per cent in 1995.

Securities analysts said it would be premature to assume that dangers of overheating have significantly receded. Such a judgment could not be made until later figures confirmed that growth is indeed slowing, they said.

Bank Negara Malaysia, the central bank, attributed the slowdown mainly to an expanded holiday period in February. However there were signs, too, that rapid consumer spending, which the government has discouraged, is easing off.

Sales and service tax collections recorded slower growth of 5 per cent and 4.4 per cent respectively, from 11.5 per cent and 18.7 per cent in the fourth quarter of 1995. Sales of passenger cars rose at 17.5 per cent, against 24.7 per cent.

The central bank said the main engines of economic growth were the manufacturing, mining, construction and services industries. It added that inflation hit an annual rate of 3.4 per cent in the first quarter, the same as for the whole 1996 year. Despite chronic shortages of labour and annual wage rises typically of over 10 per cent for skilled personnel, approved foreign investments rose.

James King, Kuala Lumpur

India sees imports surge

India recorded a \$175m trade deficit for April, the first month of India's new fiscal year, as an oil-led surge in imports outstripped disappointing export growth for the month. Imports of \$2.95bn were 32 per cent higher than the same month a year ago, with oil and related product imports at \$772m more than 49 per cent up on April 1995.

Exports grew by 13 per cent on a year ago to \$2.8bn, according to the Indian commerce ministry's provisional estimates. April's export level a year ago of \$2.46bn then represented a growth of 24 per cent.

The April trade gap compares with a surplus of \$207m for the month in 1995, but is well below the average monthly deficit for 1995-96 fiscal year of \$375m.

The Indian commerce ministry said that non-oil imports continued to be dominated by industrial inputs and capital goods.

Mark Nicholson, New Delhi

Japan downs US attack aircraft

A Japanese navy destroyer accidentally shot down a US carrier-based military aircraft during exercises off Hawaii, but the crew of the aircraft was rescued, a Japanese defence ministry spokesman said yesterday.

The 4,200-tonne destroyer Yuguri fired its anti-aircraft gun and shot down a US Navy A-6E Intruder attack aircraft while conducting manoeuvres, the spokesman said. The two crew members of the downed Intruder were rescued by a helicopter from the Yuguri and taken to the US carrier Independence, but their condition was not known, the spokesman said.

The Yuguri was part of the Japanese navy's eight-vessel contingent taking part in RIMPAC exercises in waters near Hawaii with ships from South Korea, Chile, Australia, Canada and the US. The exercises are held once every two years.

The ministry spokesman said the Intruder was towing a target drone during the day's drills when the gunner hit the aircraft.

Reuter, Tokyo

Philippine court denies top judges took bribes

By Edward Luce in Manila

In an extraordinary move the Philippine supreme court yesterday issued a statement rebutting allegations that members of the country's highest judicial body had received bribes.

The "statement of court", made in connection with a controversial tax-related case concerning Mr Lucio Tan, chairman of Philippine Airlines, denied anonymous allegations made in a "poison pen" letter in general

circulation which suggested judges had received "lavish bribes" in exchange for a vote in Mr Tan's favour later this week.

The statement refers to an "enabling" case which would decide whether the government could press charges against Mr Tan for alleged tax evasion, which he denies. Mr Tan also denies all charges of corruption.

"The supreme court statement is a highly unusual act for it to make," said Ms Haydee Yorac, a local attorney and professor of law. "The case

has generated more controversy than any other in [the Philippines] recent history, which is why the supreme court stepped in."

The case hinges on whether the government breached Mr Tan's legal rights by launching an investigation into his tax affairs without giving him 30 days' notification.

Should the ruling go against Mr Tan, government lawyers would file a criminal prosecution against him alleging that he evaded 25bn pesos (\$51bn) in taxes between 1990 and

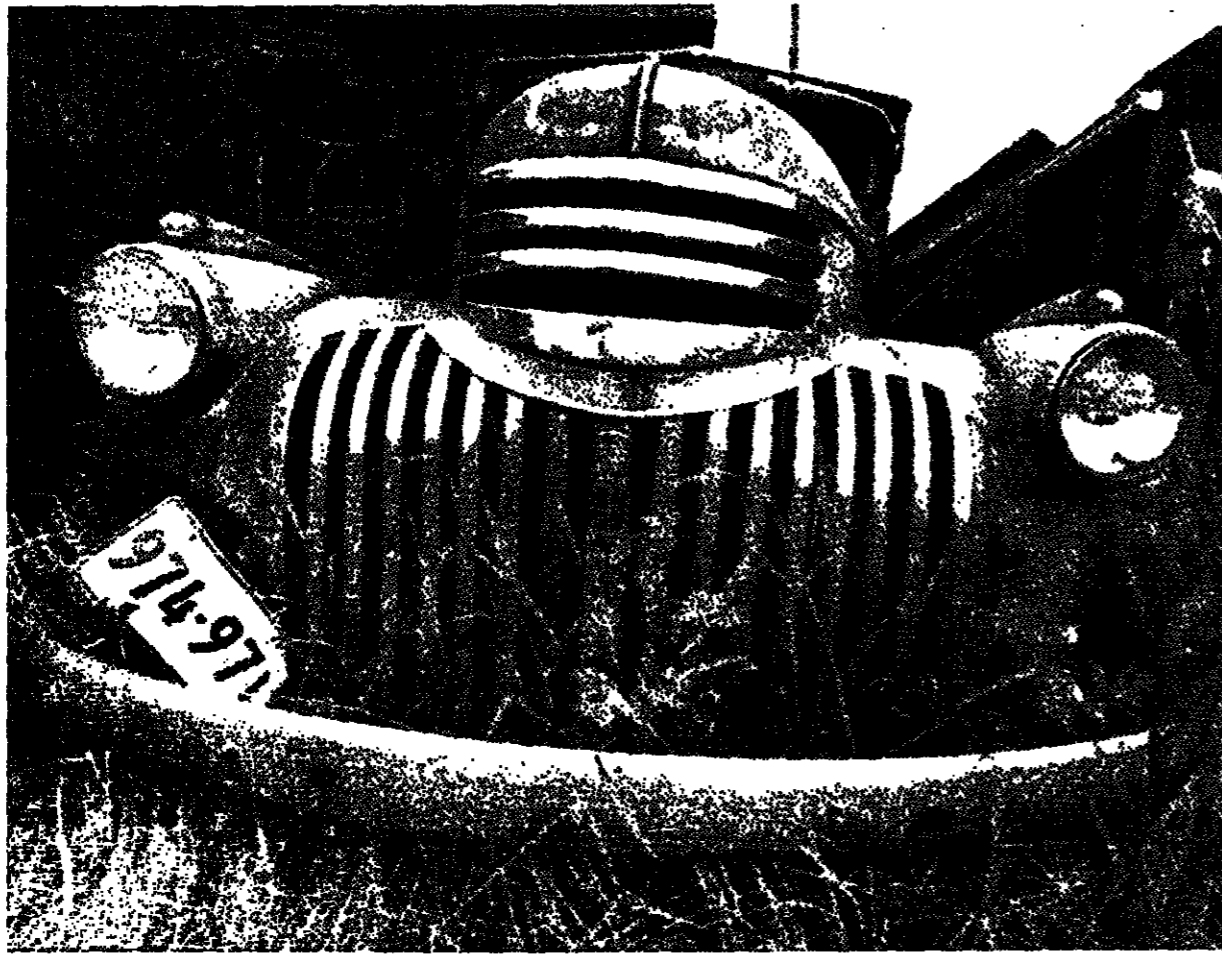
1992. The government's case would be based on its contention that Mr Tan set up "ghost" marketing arms, enabling him to under-declare production costs at his tobacco and brewery subsidiaries to minimise value added tax payments.

The supreme court statement said: "That [poison pen] letter states, in essence, that three members of the court's first division were lavishly bribed by Lucio Tan."

The statement describes the allegations as "malicious" and unfounded.

The development comes in the wake of a report published in Germany this week by Transparency International, a multinational organisation dedicated to curbing corruption in international business, ranking the Philippines as one of the most corrupt countries in the world.

Mr Tan, who is one of the country's leading Chinese-Filipino tycoons, owns a number of businesses, including a bank and the country's second largest brewery.



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Further arrest in S Korea probe

By John Burton in Seoul

A senior South Korean finance ministry official was arrested yesterday in the country's stock market bribery scandal, but prosecutors indicated their investigation would soon be completed.

Mr Han Taek-soo, head of the Finance Ministry's treasury bureau, was accused of accepting Wons0m (\$83,500) for helping Korea Data Systems to gain a listing last November in spite of the company's poor financial position.

Mr Han allegedly gave Wons0m Mr Park Won-ho, the chairman of the Securities Supervisory Board, who was arrested on Sunday on similar corruption charges.

News that the probe appeared to be at an end led to a sharp rebound in the stock market, with the general share index returning to the level it was on Sunday when the scandal broke.

The bourse had been shaken by allegations that government officials had accepted bribes for granting approval of list-

ings on the Seoul exchange.

More than 20 companies are waiting to issue initial share offerings on the Seoul bourse. However, the government has strictly limited the number of new share issues in order to prevent a surplus of listings from depressing share prices.

The companies involved in the bribery scandal are believed to be mainly small concerns which desperately need to raise capital from the stock market or else face financial problems.

Prosecutors said that they

might investigate two or three other officials, but otherwise no further arrests are expected to be made.

President Kim Young-sam blamed vague procedures governing stock listings for the scandal and ordered that more transparent rules be introduced.

But analysts believe that the government wants to limit the extent of the investigation because of fears it could disrupt an already fragile market worried about a growing trade gap and sluggish exports.

Mr Ma takes on Taiwan's 'deep culture of corruption'

Laura Tyson on the popular justice minister with an unpopular brief

At a dinner party, Taiwan's justice minister was reminiscing with legislators about the country's parliamentary elections last December. One thanked him for cracking down on the once widespread practice of vote-buying. "Mr Ma, you saved me \$100m (US\$3.6m)," he said. Another leaned across the table and said: "Mr Ma, you saved me T\$200m!"

Not everyone is so appreciative of Mr Ma Ying-jeou, the 45-year-old Harvard law school graduate who tops ratings among government officials in public opinion polls. When he first took over the ministry in 1993, he was pitted. Now he is feared.

"I think our investigators and prosecutors have really done their job," he said in an interview. "And in doing so, our ministry and myself have created a lot of enemies and they seek my departure as minister."

Mr Ma vows to change what he calls Taiwan's "deep-rooted corruption culture". He says he wants to make corruption merely "a fact of life, not a way of life". During his three-year tenure, he successfully took on electoral bribery and drugs, which led to thousands of convictions and a substantial reduction in such crimes. Voter turnout was down 5 per cent in the last parliamentary elections, considered a sign that candidates had cut back on *zou lu yong* to voters - a "fee" just for walking to the

polling booth. And illegal amphetamine labs have transferred their operations from Taiwan to China, driving the local price so high most users have been priced out of the market.

Using these campaigns as a blueprint, he has now mapped out a strategy to tackle organised crime - a mission which has struck a little too close to home for his own ruling Nationalist party. "Taiwan must undergo a major transformation in this regard in the next few years, otherwise we

who once ranked just behind a local movie star and a Cantonese pop star in a survey asking Taiwanese women whom they found most attractive, out of the limelight. Still others are politicians, powerful businessmen and underworld figures.

"Members of the underworld have become elected representatives of our government, at the local, provincial and national levels. This is a problem that is well known to our citizens," said Mr Ma. "A thorough house-cleaning is vital to regain the trust of our people."

He has proposed to the ruling party a comprehensive strategy of attack involving both legal and operational measures. "In the next 19 months, we will have no elections. That is a good opportunity for us to get the necessary laws passed and to take vigorous action to clean up this society. This is a critical moment," he said.

Some of Mr Ma's enemies are senior members of his own party. Others are political rivals who want to push the photogenic cabinet minister,

Public confidence in law enforcement and the integrity of government officials has fallen sharply recently in the wake of a spate of controversies highlighting gangster influence in politics. One was a bid-rigging scheme allegedly involving the Bamboo Union Gang, one of Taiwan's biggest triads, in an airport expansion project. An executive of a leading Nationalist-run company and four parliamentary legislators including the Nationalist party whip are among those being investigated.

Gangs have become increasingly public in their activities. At the February funeral of the assassinated leader of the Four Seas Gang, an estimated 10,000 gangsters joined a funeral procession across the capital. Numerous senior politicians attended or sent condolences.

"Here, the underworld has been more involved in public construction projects than in drugs, which is unique," Mr Ma said. "Public construction projects usually involve large sums of money, so they are as lucrative as or more so than drug trafficking."

First, he says, laws must be changed to make the formation of, and participation in, an organised crime organisation itself a crime.

Next, the government should carry out an island-wide swoop. "We should do it in one shot, on a national scale, so they don't have time to conceal their illegal activities... and it should be aimed at the big shots," Mr Ma said.

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NEWS: WORLD TRADE

WORLD TRADE NEWS DIGEST

Toll-free calls go worldwide

Businesses offering freephone services will be able to register a single worldwide "toll-free" number from early next year...

Vietnam picks airport shortlist

Vietnam has shortlisted three foreign companies for a contract valued at about \$180m to upgrade Vietnam's busiest airport...

Dynamic Singapore is praised

Singapore's "dynamic and open" economy won praise yesterday from trading partners in the World Trade Organisation...

Honda has started building its \$100m car plant near Sao Paulo in Brazil. Japan's third-biggest carmaker aims to make about 30,000 Civic models a year by 1999...

BAe wins Kuwaiti missile contract

British Aerospace has beaten Aerospatiale of France to an order for \$100m of anti-ship missiles to equip Kuwait's new fast patrol craft...

Sea Skua was originally developed as a helicopter-launched light anti-ship missile with a range of about 15km, and is in use in that role with six navies...

Now Sea Skua has broken into this surface launch market, it may be in contention for other orders. Fast patrol craft are in use in a number of Gulf and Pacific Rim countries...

The explosion of Ariane 5 is a setback not only for Europe's commercial satellite launching programme but also for space science. The \$500m Cluster mission to study the effects of the "solar wind" on the earth was wiped out...

European rocket's dominance of world launch industry now at risk

Explosion shatters Ariane's hopes

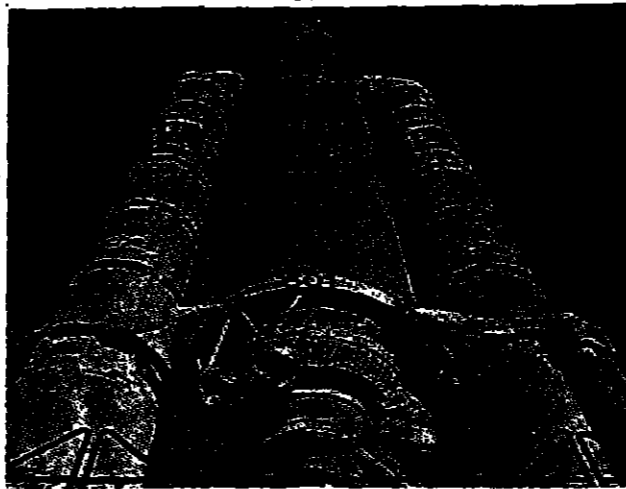
By Michael Skopinkar, David Owen and Clive Cookson

Investigators will need time to discover the precise cause of yesterday's failure of the maiden Ariane 5 flight over French Guiana...

The real blow from yesterday's crash is that it was Ariane 5 which failed. The new launcher is central to Europe's drive to continue its leadership of the satellite launching industry...

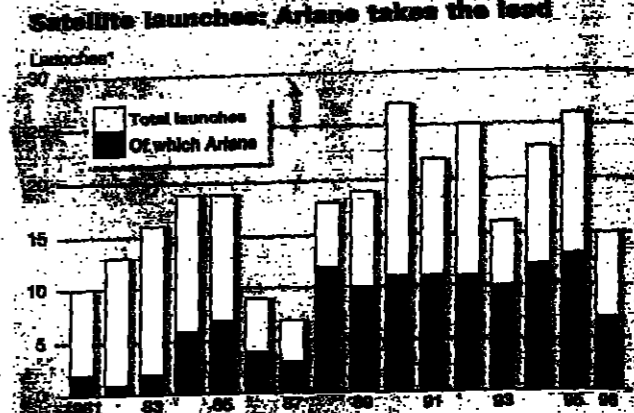
Ariane 5 stood for European, and particularly French, pre-eminence in an industry once dominated by the US. Last year, more than 12,000 people visited "Ariane City", the Ariane 5 production facility on the banks of the Seine...

Mr Francis Avanzi, Arianespace's chief operating officer, said earlier this year that the consortium wanted to launch three Ariane 5 rockets next year...



Arianespace's chief operating officer, said earlier this year that the consortium wanted to launch three Ariane 5 rockets next year, four in 1996 and five or six in 1997.

At the end of the century, launches of the existing Ariane 4 rocket would cease and production of Ariane 5 would increase to eight a year. Ariane 5 was designed to launch two satellites with a combined weight of 5.9 tonnes...



HIGH HOPES: The Ariane 5 launcher, pictured left, after its roll-out in Kourou, French Guiana, in April

accident is that the two-year lead that Arianespace hoped to have before the arrival of a string of potentially tough new competitors will be truncated.

But Mr Stéphane Chenard, senior space analyst with Euroconsult, the Paris-based consulting firm, said the extent of the setback to Europe's space operations should not be overstated.

Scientists aghast as 10 years' work is lost

By Clive Cookson, Science Editor

The explosion of Ariane 5 is a setback not only for Europe's commercial satellite launching programme but also for space science. The \$500m Cluster mission to study the effects of the "solar wind" on the earth was wiped out.

Cluster project director, said before launch: "We are putting all our eggs in one basket." Mr Credland said yesterday, after the explosion, that there was no insurance because Cluster was an experimental scientific mission on Ariane 5's maiden launch...

Scientists, some of whom had devoted almost 10 years to Cluster experiments, were devastated. In the UK, where 245m of scarce government research grants had been spent on Cluster...

ter, a group of 50 space scientists saw the disaster on a live video link from French Guiana to the Rutherford Appleton Laboratory in Oxfordshire.

now, even if the money could be found, of turning round and doing it again. We are just going to have to grin and bear it." He denied that it was foolhardy to risk such an important mission on the maiden flight of a new rocket.

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Investment flows surge to record US vows to quit shipping talks

By Frances Williams in Geneva

Worldwide flows of foreign direct investment soared by 46 per cent last year to a record \$325bn from \$222bn in 1994, according to preliminary estimates by the United Nations Conference on Trade and Development.

By Frances Williams in Geneva

The US yesterday said it had no intention of reversing its earlier decision to withdraw from multilateral talks on liberalising international shipping.

By Frances Williams in Geneva

US negotiators at the World Trade Organisation in Geneva rejected as inadequate a comprehensive package of market-opening proposals presented yesterday by the European Union and 23 other countries...

By Frances Williams in Geneva

stantal opening of market access and is no basis for the US to table an offer. Negotiators are scheduled to meet again on June 17. Washington has been given until June 14 to decide on its response...

Agreement on car-factory sale and refit helps to ward off job losses

Portugal strikes Renault plant deal

By Peter Wise in Lisbon

Portugal is abandoning a \$650m (\$38m) claim for damages against Renault following agreement over the future of a Portuguese plant which the French vehicle manufacturer had threatened to close with the loss of 760 jobs.

on the possible purchase of the Setúbal plant, which makes Cacia cars. Portuguese newspapers said the companies included Chrysler of the US.

plant at Cacia. Renault will also invest in equipping the Cacia plant, whose output includes gear boxes and C&G engines for the Twingo car, to produce more sophisticated components.

Talks between Renault and the previous centre-right government broke down last September after the French group refused to back down on a plan to close the Setúbal plant because of excess production and falling consumer demand for the Clio.

SECOND-HAND TOBACCO SMOKE IN PERSPECTIVE

Is everything bad for us? Or are we getting things out of proportion?

Almost every day, it seems that one thing or another has been discovered to be some kind of health risk.

In one scientific study, even the ordinary biscuit was linked to heart disease.

But as common sense suggests (and scientists confirm) not everything described statistically as a risk is a meaningful risk.

For example, lots of people have been persuaded that second-hand tobacco smoke is harmful.

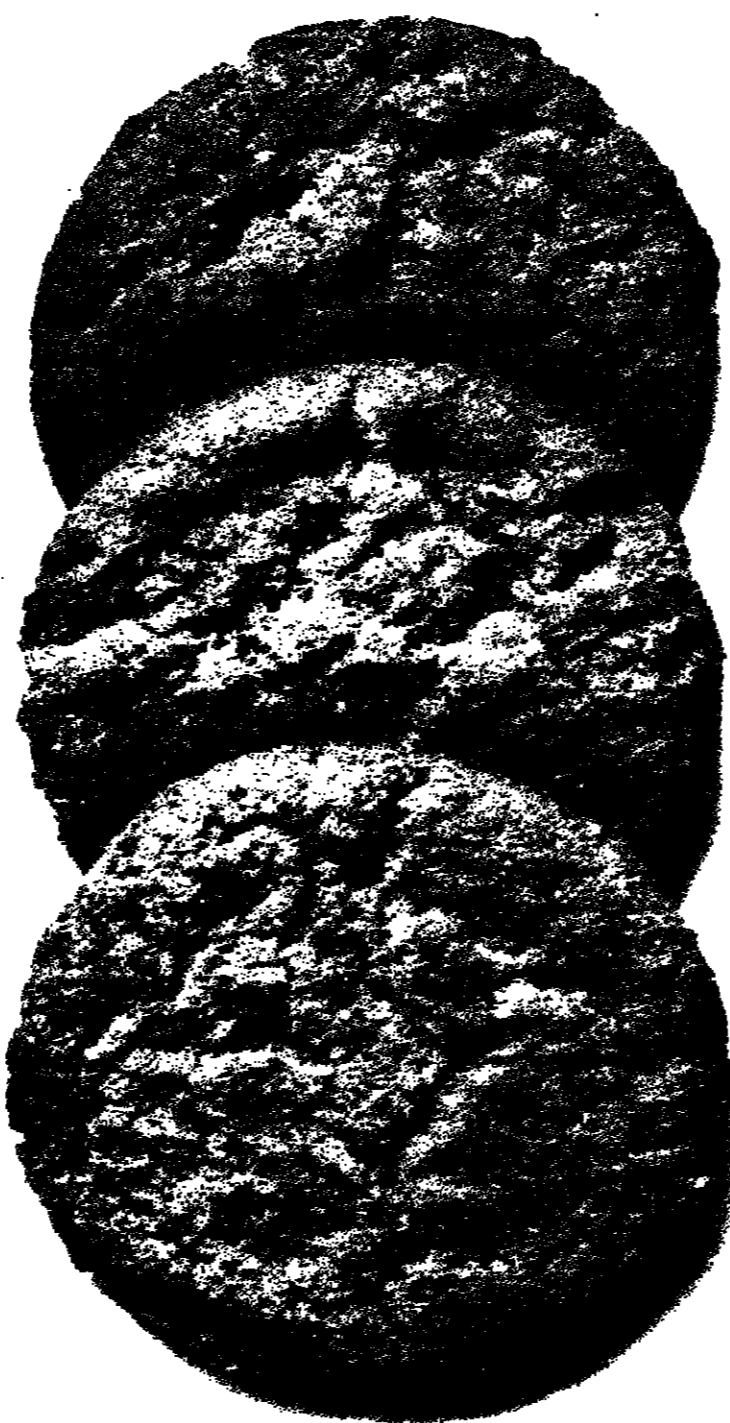
Not surprising, perhaps.

After all, we recognise that smoking itself is a risk factor for certain human diseases and that some people find second-hand tobacco smoke unappealing and unpleasant.

But what about second-hand tobacco smoke? Is it really a meaningful health risk to people who've chosen not to smoke?

Not, we think, if you look at the evidence.

The United States Environmental Protection Agency recently conducted a major review of studies on the risks of second-hand tobacco smoke to non-smokers. These studies typically involve non-smokers living with smokers over a long period, such as 20 years.



And this review put the risk of lung cancer from second-hand tobacco smoke at a level well below the risk reported by other studies for many everyday items and activities.

And below, in fact, the risk to health that one other study reported for eating one biscuit a day.

As the table below shows, many everyday activities have been statistically associated at one time or another with apparent risks to health.

But reputable scientists say that weak associations aren't necessarily meaningful.

So there's no big campaign to persuade you to give up your daily biscuit.

Nor is there any sound justification for a campaign against second-hand tobacco smoke.

If you'd like to decide for yourself, please write to us at Philip Morris Europe S.A., c/o P.O. Box 107, 1000 AC Amsterdam, The Netherlands or fax us on 00 31 20 671 98 89.

We'll send you the evidence about second-hand smoke.

We believe you'll find the case convincing.

Everyday Activities	Reported Relative Risk*	Reported Health Effect	Scientific Study Reference
Diet highest in saturated fat	6.14	Lung cancer	Journal of the National Cancer Institute, Vol. 85, p.1906 (1993)
Non-vegetarian v vegetarian diet	3.08	Heart disease	American Journal of Clinical Nutrition, Vol. 31, p. S191 (1978)
Frequently cooking with rapeseed oil	2.80	Lung cancer	International Journal of Cancer, Vol. 40, p. 604 (1987)
Drinking 1-2 glasses of whole milk per day	1.62	Lung cancer	International Journal of Cancer, Vol. 43, p. 608 (1989)
Eating one biscuit a day	1.49	Heart disease	Lancet, Vol. 341, p. 581 (1993)
Drinking chlorinated water	1.38	Rectal cancer	American Journal of Public Health, Vol. 82, p. 955 (1992)
Eating pepper frequently	1.30	Mortality	American Journal of Epidemiology, Vol. 119, p. 775 (1984)
Exposure to second-hand tobacco smoke	1.19	Lung cancer	U.S. Environmental Protection Agency (1992)
High vegetable diet	0.37	Lung cancer	International Journal of Epidemiology, Vol. 25, Suppl.1, p. 32 (1996)
High fruit diet	0.31	Lung cancer	American Journal of Epidemiology, Vol. 133, p. 683 (1991)

*Relative risk measures how much consuming, or being exposed to something, raises or lowers risk.

Philip Morris Europe S.A.

Second-hand tobacco smoke. Let's keep a sense of perspective.

NEWS: UK

'Shareholders are getting less as employees are getting more,' says chairman of Barclays

Bank chief criticises pay for top traders

By George Graham in Sydney

Banks are storing up trouble by paying their high-flying traders too much and their shareholders too little, one of Britain's leading bankers warned yesterday.

Mr Andrew Buxton, chairman of Barclays Bank, said retail banks were making so much money that they "may be tempted to throw money at employees in the belief that they are investing in the future". Instead they were increasing their risks.

At the same time, employees

expected a higher proportion of profits to be paid out in bonuses, leaving less retained profit for shareholders.

"The traditional link between profitability and employee remuneration is getting broken. Shareholders are getting less as employees are getting more, and that is a threat that shareholder banks need to recognise," he said.

Mr Buxton issued his warning in a speech in Sydney to the International Monetary Conference, a gathering of 150 top executives from some of the world's largest commercial

and investment banks. It follows a furor over investment banking salaries in London, where several banks have tried to build up their businesses by hiring staff from their competitors.

Particular attention has focused on Deutsche Morgan Grenfell, the investment banking subsidiary of Germany's Deutsche Bank, which has recruited heavily over the past year. Competitors complain that DMG's standard offer to attract important staff is to double the salary and bonus they received last year, and

guarantee the total for three years.

Mr Buxton said he could understand guaranteeing bonuses for the first year, a practice which had now become prevalent, but was opposed to guarantees over two or three years. "I believe the concept of offering medium-term guaranteed bonuses is quite wrong," he said.

But Mr Eilmar Kopper, the chief executive of Deutsche Bank, and among those attending the Sydney conference, said he was not worried by the level of salaries paid to his

London investment bankers. "I would start to worry when the returns wouldn't be there," he said.

Mr Aad Jacobs, the chairman of the executive board of ING Group, the Dutch insurance and banking conglomerate which last year took over the collapsed Barings investment bank, also remained unperturbed at the level of salaries in his new affiliate, even though fund managers in the UK and US were often paid twice as much as their Dutch counterparts while running smaller portfolios.

"If you want to work in Rome, do as the Romans do," he said, adding that "quite spectacular" growth rates made high salaries easier to swallow.

But several other senior bankers said they shared Mr Buxton's concern that the industry might be building up a heavy cost base that would prove unsustainable if investment banking revenues declined. That decline was already under way, they said, as financial products increasingly became standardised commodities.

The 'mad cow' crisis: British government tactic brings EU ministers' meeting to a halt

Foreign secretary cautious about early end to curbs

Financial Times reporters in Brussels, Luxembourg and London

Mr Malcolm Rifkind, UK foreign secretary, yesterday damped hopes of a deal to lift the worldwide ban on British beef products before the European summit in Florence on June 21.

Failure to reach agreement would prolong Britain's policy of non-co-operation on EU business launched in an effort to secure early agreement on lifting the ban.

The European Commission is also dismayed that its efforts to broker a deal were being undermined by Britain's non-co-operation policy, especially as the 110 20-member Commission was expected to decide today to lift the ban on three British beef by-products.

Mr Franz Fischler, EU agriculture commissioner, warned that the timing of the lifting of the ban on derivatives was "up to Britain". It depended on how quickly UK tallow and gelatine plants met new safety requirements imposed by the EU.

Ministry of Agriculture officials in London said last night Britain would move fast to implement any conditions agreed with the EU to facilitate

a staged lifting of the ban. "We are not being bloody minded - we are prepared to compromise to meet their concerns," one official said.

Mr John Major, the prime minister, told MPs in London yesterday he was looking for "early dates" for the beginning of a staged lifting of the beef export ban. But he repeatedly sidestepped questions from Mr Tony Blair, leader of the opposition Labour party, on whether Britain was demanding a specific timetable.

In its most concerted disruption campaign yet the UK yesterday blocked 10 decisions - including several that had actively supported - at a meeting of justice and home affairs ministers in Luxembourg. Mr Michael Howard, British home secretary, said the UK's campaign was to "concentrate the minds of the other governments of the European Union".

Mr Rifkind, launching a diplomatic offensive in European capitals, said yesterday before meeting Mr Jacques Santer, European Commission president, that reaching a framework agreement before the Florence summit was a "desirable" timetable, but not "crucial".

Mr Fischler said the terms of the framework agreement



British foreign secretary Malcolm Rifkind was guardedly optimistic about the beef deadlock after he had met German chancellor Helmut Kohl at a Nato meeting in Berlin.

sought by the UK for a step-by-step lifting of the embargo would have to be approved by the standing veterinary committee which two weeks ago voted against easing the ban on beef derivatives.

A Commission spokesman said talks yesterday between Mr Rifkind, Mr Douglas Hogg, the British agriculture minister, Mr Santer and Mr Fischler

had been "constructive". The two sides were "on a path towards a strategy for a step-by-step lifting of the ban."

The cautious British tone followed the failure of farm ministers to agree on a European Commission proposal to ease the ban on gelatine, tallow and bull semen, forcing the Commission to take the decision.

British relief that the European Commission could lift the ban was tempered by knowledge that six countries - Germany, Austria, Portugal, the Netherlands, Belgium and Luxembourg - remained opposed.

In Luxembourg yesterday, the justice and home affairs ministers meeting was brought to a standstill as all six decisions require unanimity.

Beef consumption well below pre-BSE levels

EU beef consumption

% change since March 20 when possible BSE-CJD risk admitted

Country	Week commencing	
	April 29	March 25
UK	-30	-37
Ireland	-30	-37
France	-30	-37
Germany	-30	-37
Netherlands	-30	-37
Italy	-30	-37
Spain	-30	-37
Denmark	-30	-37
Sweden	-30	-37

Source: An Bord Bia

By Caroline Southey in Luxembourg

European Union farm ministers yesterday attacked as inadequate European Commission plans to pay aid to farmers for losses caused by sharp falls in beef prices and consumption following the scare over "mad cow" disease.

The latest figures show that beef consumption in many EU countries is still well below levels before the "mad cow" crisis broke in March when the British government announced a possible link between BSE

and a fatal human brain condition.

Yet consumption has improved since the sharp falls in the first week of the crisis, according to figures drawn up by the Irish Food Board, a government-funded body responsible for promoting Irish food and drink. Germany is showing a recovery from the 70 per cent fall recorded on March 29 to 30-50 per cent in the first week of May.

In Britain consumption has recovered from a 40 per cent drop to 15 per cent and in the Netherlands it has bounced

back from 60 per cent to 10 per cent.

EU farm ministers pressed Mr Franz Fischler, commissioner for agriculture, to improve the terms of an Ecu650m (£600m) aid package. Germany, France, Ireland, Portugal and Luxembourg in particular argued for more money.

Under the plan farmers who qualify for the special beef premium will receive an additional one-off payment of Ecu2, while those who qualify for the suckler cow premium will receive Ecu25. Member states would be allowed to allo-

cate Ecu115m of the total package to farmers they believe have not been fully compensated.

Mr Fischler warned that the commission had "no additional resources", pointing out that the commission would have to "pull out all the stops" by buying meat into intervention if further falls in prices were to be avoided.

He said the Commission was paying out Ecu230m for every 100,000 tonnes bought into intervention. So far 115,000 tonnes have been taken off the market and into intervention.

Science and not politics to dictate Brussels moves

By Caroline Southey in Luxembourg and Judy Dempsey in Berlin

Decisions about the ban on British beef will have to be dictated by science, not politics, Mr Franz Fischler, European commissioner for agriculture, warned yesterday. Underlining the prospect of a long haul in the beef negotiations, Mr Fischler said the Commission could not "allow the impression to arise that agreements are political and that scientific evidence is secondary".

Mr Fischler was speaking the day after six farm ministers blocked a decision in the council of ministers to lift the ban on three British by-products and as talks began between Britain, the other member states and the Commission on the terms of a framework for the step-by-step lifting of the ban. The terms of the framework agreement on the ban would have to be "compatible with state of the art scientific evidence".

The speed at which the by-products ban, which the Commission could agree to today, would be lifted was "up to Britain," Mr Fischler said, adding that

Beef exporters are furious because the government is ordering them to repay subsidies of up to £10m (£15.4m) on exports that have been rendered virtually unsaleable by the EU's worldwide export ban. Alison Matland writes in London.

Individual exporting companies face demands for repayment of refunds worth between £300,000 and £2m, according to the International Meat Trade Association. Many will find their bank guarantees being called in to cover the costs, jeopardising prospects for future exports.

It depended on how quickly licences were issued for plants producing gelatine and tallow and the information passed to the Commission so that inspection teams could be sent to the UK.

Mr Fischler would not be drawn on what the Commission would do if member states refused to allow British imports of gelatine, tallow and semen, saying he did not want to "express any mistrust. All member states are bound by the terms. Unless there is proof to

The association is already planning legal action against the government because exporters have been excluded from the government's compensation package for the meat industry. Many companies are facing severe cashflow problems because they have unsold stocks worth about £12m.

"I can't believe what's happening," Ms Jenny Burt, chairman of the association's export committee, said last night. "It's almost as if the government and Maff [the Ministry of Agriculture] are intentionally trying to pull the rug from under our feet."

the contrary I must assume they will keep faith," he said.

Ministers in Germany indicated yesterday that it would still be difficult to persuade the states, or Länder, to accept any imports of British beef or beef by-products. Given all the scientific reasons, it was neither feasible nor responsible to lift the ban, Mr Horst Seehofer, the German health minister, said. A complete ban could last beyond September in Germany, he added.

But Mr Malcolm Rifkind, the British

foreign secretary and Mr Douglas Hogg, the agriculture minister, will today try to persuade their German counterparts that British beef is safe. They will meet Mr Klaus Kinkel, and Mr Jochem Borchert, their German counterparts.

Mr Rifkind yesterday met Mr Helmut Kohl, the German chancellor in Berlin, where both were attending the Nato summit. After the 45-minute meeting with Mr Kohl, Mr Rifkind said there was "increasing readiness to find a solution to the problem".

German officials, however, said their government's position had not changed. The interests of consumers came first, and Britain had to put forward a clear timetable for slaughtering animals and eradicating mad cow disease before even the slightest concession would be considered. There also had to be a consensus in the scientific community.

Germany's health ministry - and the Länder, or states - have consistently opposed any partial lifting of the ban in "the interests of consumers," as Mr Seehofer said yesterday. Next week, he will meet the Länder in Berlin to discuss how they should react to any partial lifting of the ban.

Lottery operator says it is the greatest

By Raymond Broddy and James Birtz

Camelot, the operator of the National Lottery, yesterday claimed that it had become the largest and most efficient

lottery in the world - at the same time as it ran into a barrage of criticism over its profits. The consortium, which had total sales of £5.217bn (£7.91bn) in the year to the end of March with £1.416bn going to "good causes", made a pretax profit of £77.5m and an after tax profit of £51.1m, just under £1m a week.

The Camelot consortium consists of the Cadbury Schweppes food group; De La Rue, the security printers; the UK offshoot of US lottery company GTEC; Rascal Electronics; and JCL, the computer group. Camelot argues that the after-tax figure is the crucial number because it operates a highly regulated business with little opportunity to vary tax rates.

The after-tax profit figure is almost exactly in line with Camelot's first full half year when the after-tax profit was £22.5m.

Mr Jack Cunningham, the shadow Labour party's opposition national heritage secretary, said yesterday: "People throughout the country are naturally concerned about the excessive profits made by Camelot. A Labour government would seek an efficient, non-profit-making promoter so more of lottery profits can go directly to the good causes."

The national heritage committee of the House of Commons, while conceding that the National Lottery had been a great success, suggested that Camelot should give more of its profits to charity. Last year the company paid more than £550,000 to community and charitable projects and will consider the committee's point.

Camelot, however, issued independent research on the top 30 lotteries in the world. It showed that Camelot was the largest lottery in the world and returned more money to worthy causes and the government than any other lottery in terms of money and as a percentage of sales.

Camelot insists that profit after tax will average less than 1p in the £1 through the seven-year licence period because the proportion retained by Camelot is squeezed as sales rise. Yesterday, senior Labour officials privately admitted there is little a Labour government could do to reduce Camelot's profits until its licence expires.

One idea being studied by the powers of the lottery regulator, allowing action if profits have considered unreasonable. Lottery law allows the regulator to vary any condition in the licence even if the company does not consent.

As a separate venture Camelot is considering taking part as an investor in other lotteries around the world.

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UK NEWS DIGEST

\$150m defence order awarded

Smiths Industries, the aerospace equipment manufacturer, said it had won an order worth up to £100m (£150m) to install enhanced safety systems on UK military helicopters. The group said it had beaten rival bidders from British Aerospace and Stewart Hughes of the US to fit integrated "helicopter and usage monitoring systems" (Hums) to 48 Chinook helicopters. The UK defence ministry, which invited bids for the safety equipment last summer, is considering ordering the equipment on a lump sum, including Sea King, Puma and up to 275 other helicopters including Lynx aircraft.

Plans to fit the equipment followed the crash in 1988 of an RAF Chinook in Scotland which killed four crewmen and 25 senior Northern Ireland security experts. The accident was blamed on pilot error rather than equipment failure. Although the initial contract is worth only about £20m, Smiths said it was confident of winning further orders from the UK ministry. "US forces are considering installation of Hums capabilities on several thousand military helicopters including 1,300 Army Chinooks," the company said.

The system works by collating data from 200 sensors around the aircraft, which can be monitored by pilots for signs of stress or fatigue. That information can be used subsequently by maintenance crews for helicopter repair work and enhances the function of "black box" flight recorders in the event of a crash. Smiths has developed the system jointly with MJA Dynamics, the UK software specialist, Aero-Westland Helicopters, Scientific Atlanta of the US and GEOSystems, the ground support equipment business. Shares in Smiths rose 1p to 689p on the London stock market.

Executive lifestyles change

The stereotype of the thrusting young male executive, working all hours of the day and night while his female counterpart dreams of going part-time, seems finally to have had its day. Young men are now more likely than young women to be interested in flexible working arrangements, while females are more anxious to be seen as successful than males, says a study of childless adults aged 20-34, published today.

Being attractive to the opposite sex is twice as important for men in this age group as it is for women, according to Mintel, the market intelligence group. From a sample of 726 young people, the study finds that 17 per cent of women want to be described as "successful", compared with 14 per cent of men. Top attributes for both groups are loyalty and trustworthiness. From a sample of 229 pre-family adults, 78 per cent of men said they would prefer to be able to work flexibly compared with 69 per cent of women.

Diane Summers, Marketing Correspondent

Rebel accountants defeated

Rebel members of the Institute of Chartered Accountants in England and Wales failed by a wide margin to persuade its annual meeting to back direct elections for the post of president. The motion was lost by 335 votes to 77. Dr Jeff Wooller, who proposed the reform, is a member of a ginger group for greater democracy. He said he would return to the issue next year. The institute has already set up an independent review of its constitution.

Jim Kelly, Accountancy Correspondent

Skill shortages alleged

Skill shortages are holding back expansion in the British engineering industry, said Mr Davey Hall, president of the ASEE engineering trade union. He added that some companies were finding "immense difficulty in attracting workers with the relevant skills" and wage levels were being pushed up as demand for skilled labour increased. But his observations appeared to conflict with the latest pay trend findings from the Engineering Employers Federation which showed a fall in the increase of the level of wage settlements in the three months to the end of April to 3.7 per cent.

By Robert Taylor, Employment Editor

Government secrecy claimed

Friends of the Earth, the environmental group, yesterday accused the government of using legally "dubious" excuses for withholding environmental data on water companies and other privatised enterprises. It urged the government to set up an independent body to consider appeals under a European Union directive on freedom of information. This requires environmental information held by public authorities, subject to some exceptions - such as commercially sensitive data - to be publicly available.

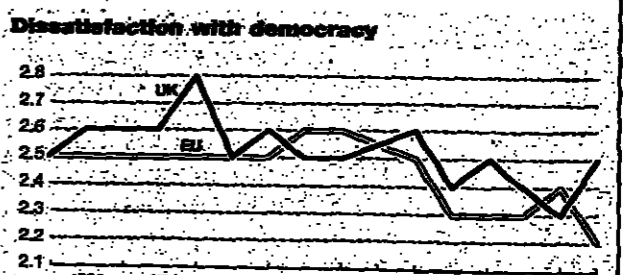
Friends of the Earth said it had been denied information about the estimated costs of water companies' programmes for cleaning up sewage and drinking water during the 1994 review by the industry regulator of the prices they could charge.

Lesly Boulton, Environment Correspondent

Democracy loses friends

Rising public dissatisfaction with government and the state of democracy is not a uniquely British trait. The trends are similar throughout the developed world, with sharp declines in public confidence across most European Union states over the past five years. The graph shows ratings of satisfaction with democracy compiled by Dr André Kaiser of Mannheim University in Germany, from the regular Eurobarometer surveys of citizens' attitudes to institutions across the EU.

It reveals a sharp decline in public confidence in democracy across the EU between 1990 and 1994. The UK was broadly in line with the EU trend. A rating of more than 2.5 on the scale indicates a majority satisfied with the state of democracy. The UK was at 2.5 or above consistently from 1978 until 1992, while



Source: Eurobarometer

The EU as a whole was at 2.5 or above from 1984 until 1992. The subsequent decline in satisfaction with democracy is less sharp for Britain than for some other EU states - notably Germany, under the impact of unification. Public confidence in democracy has long been lower in France than in Britain.

Andrew Adams, Public Policy Editor

COMPANY NOTICES

INTERNATIONAL TENDER

ARAB COMPANY FOR LIVESTOCK DEVELOPMENT "ACOLID" INTEND TO ESTABLISH AN INTEGRATED DAIRY PROJECT IN THE KINGDOM OF SAUDI ARABIA

INTERESTED BIDDERS CAN CONTACT AT RIYADH 11415 - P.O. BOX 18389 K.S.A. TEL: (01) 4625445 - FAX: (01) 4651497

CLOSING DATE IS 4/9/1998 AT 1:30 P.M.

LEGAL NOTICES

NOTICE OF APPOINTMENT OF LIQUIDATOR

Name of company: G W J Holdings Limited
Name of liquidator: G W J Holdings Limited
Address of registered office: 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616,

BUSINESS AND THE ENVIRONMENT

Angela Bleasdale writes on solar energy's new dawn in the first part of a series on the sector

Here comes the sun

Solar power, for decades regarded as environmentally worthy but uneconomic, is increasingly being seen as a viable energy option with vast commercial potential. In spite of hundreds of millions of dollars of investment during the past 20 years, the world market is still small. Only about 70MW of photovoltaic (PV) cells were produced last year for solar power - enough to power a small city such as Oxford in the UK.

Yet a combination of new technology developments, rising demand in developing countries and measures by western governments to kick-start their own markets is generating a brighter future and a potential multi-billion-pound market.

According to Strategies Unlimited, a California-based consultancy, the industry has the potential to grow to 1,800MW by the year 2010, under certain conditions. The forecast was released last month at a PV convention in Virginia, organised by the US Institute of Electrical and Electronic Engineers.

Growth like that would be a shot in the arm for the PV industry. For several years, world production has shown steady year-on-year growth of about 15 per cent, but manufacturing capacity still exceeds demand. Globally, there is an

estimated annual turnover of just \$450m (\$690m), according to the Energy Technology Support Unit at Harwell in the UK.

It is "little more than a cottage industry", says John Harford, manager of strategic planning at BP Solar International, a subsidiary of British Petroleum, the UK-based oil group. PV enables light to be transformed directly into electric power - when light falls on to

Solar panels can be located in the facades or roofs of commercial or domestic buildings

the solar cells' thin film of treated semiconductor material (usually silicon), electrical charges are generated and conducted to an external grid.

Much of today's demand comes from remote communi-

ties not linked to the national grid in industrialised and developing countries.

Philip Bouverat, commercial director at the Intersolar Group, a specialist solar electric company, says the markets in developing countries are large and growing, and there is a great need for low-cost solar devices to bring electrification to rural communities.

In Indonesia alone, an estimated 11m families are without electricity. Depending on the volumes, the cost of some solar devices could be as low as \$3 per watt, says Bouverat. He says that, as volumes increase and the price approaches \$1 per watt, solar will become competitive with conventional energy.

At present, solar energy costs about 50p per unit (kWh) as an installed working system. That compares with approximately 7p per unit for conventional electricity (nuclear and fossil fuel) and

20p per unit for wind-generated power.

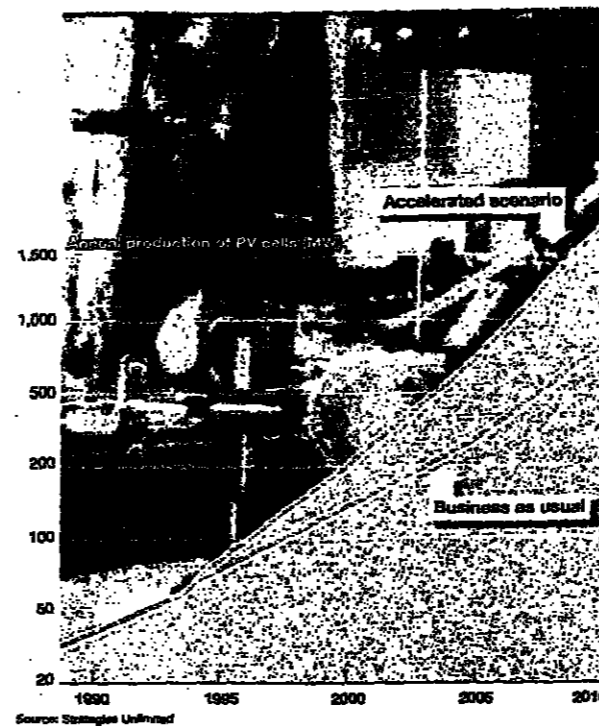
In western countries, expansion of the market could lie in grid-connected applications, where PV-generated electricity can be fed back to the national grid. Harford identifies two such applications, the first being centralised PV stations, regarded as "the holy grail" by many in the industry.

But a more likely application in the shorter term would be on PV's main advantages - power generation at point of use, avoiding distribution and transmission costs, and the fact it can be integrated into most urban buildings.

It is this area, with its substantial market potential, that has caught the imagination of the European PV industry. Solar panels can be located in the facades or roofs of commercial or domestic buildings to generate a portion of a building's electricity needs.

Richard Page, the UK junior

Two views of the future for the world photovoltaics industry



energy minister, supported this view at a recent PV conference in London. He emphasised the UK's commitment to renewable energy, including solar, which was reflected in such government projects as the Technology Foresight programme and the Department of Trade and Industry's New and Renewable Energy programme.

The DTI helped finance the £1.5m conversion of a building in Newcastle upon Tyne into the UK's first solar-power office block. Page said it showed that office buildings "will be able to generate one-third of their electricity needs from PV cladding". But Greenpeace, the environmental lobbying group, says

two-thirds of the UK's present electricity production could be generated by PV if it were deployed wholesale in homes and offices.

Harford says the industry faces a "chicken and egg" problem - PV-generated electricity is still more costly than that from fossil-fuel power stations, but, if manufacturers were guaranteed sustained demand, they would invest in high-volume production, reducing costs dramatically.

The US Department of Energy has established a joint programme with the utilities to create what it sees as a necessary virtuous circle. It intends to double sales for solar products in four years and more than double the number of utilities using PV. It spent about \$88m (£58m) on initiatives in 1995 and its cumulative expenditure is approaching \$88m.

For many years, Japan has promoted PV through its "sunshine" renewable energy programme to reduce the dependence on nuclear energy and on imported oil and gas. By 2000, it aims to stabilise carbon emissions at 1990 levels, a commitment also made by more than 150 developed nations, including the UK. Japan also says new energy sources will account for 2 per cent of its energy requirements by 2000, 3 per cent by 2010.

That compares with the European Commission's "PV in 2010" study which calls for production of electricity from renewables to be trebled. It also concludes that roof and

building-facade grid-connected applications represent the fastest-growing solar market in Europe.

Other market initiatives include rate-based incentives where individuals or businesses invest in PV, recouping their investment over 10 to 20 years via a premium rate for the electricity they feed into the national grid. The schemes are funded by a small surcharge on electricity bills. Harford says such schemes work best in countries with a high degree of local autonomy, such as Germany and Switzerland, where utility companies may be owned by local authorities and are more responsive to consumer preferences. He believes other mechanisms would be more appropriate for the UK.

Philip Wolfe, Intersolar's managing director, says the time is right to include PV in the UK's Non-Fossil Fuel Obligation, which subsidises electricity produced from renewable sources. Inclusion would expand the market, he says.

The DTI has so far excluded PV from the NFFO mechanism. "The costs of PV-generated electricity have precluded this," Page says. The position will be reviewed after the next NFFO order, to be made in 1997.

However, John Battle, Labour's energy spokesman, says the party is committed to "prising open NFFO" and will include PV as part of its green energy policy.

Viewpoint • By Peter Knight

The empty promise

The idea of 'product stewardship' is unlikely ever to work

You have finally painted that cupboard. What do you do with the nearly empty can of brilliant white gloss? Put it in the bin or drive to the licensed disposal site for hazardous waste where it rightly belongs? Chuck it in the bin, of course.

Welcome to the wacky world of "product stewardship", where manufacturers promise to take full responsibility for their products from start to finish, but fall far short of their goal.

Such stewardship is one of the central pillars of the chemical industry's Responsible Care programme, a voluntary initiative designed to improve the safety and environmental performance of the industry and, of course, its public image.

You will find plenty of promises about product stewardship in corporate policy statements on the environment. The idea is cropping up in other business areas too, most notably in the timber and paper industries (forest stewardship) and in fisheries (marine stewardship), where companies promise to take better care of that part of the environment that supports their particular business.

Product stewardship is a wonderful idea but it is unlikely ever to work. There are three big problems. First, the word "stewardship" oozes the sort of morality that business hates. Second, the idea only half-works in practice. Third, it is all based on empty promises.

A steward used to be the head slave, the man who looked after his master's

Stewardship is a non-starter without policies that prime the markets

household. He never owned a thing but had to make sure that everything ran smoothly, all accounts balanced and the estate was in tip-top shape to pass on to the heir.

Greens tell us we must be the stewards of the earth and look after it for future generations. This sounds fine coming from a pulpit and it might indeed be the "right thing to do". But, as a business word, "stewardship" stinks. It is dripping with morality, which makes it difficult to sell to managers trying to meet financial and production targets.

Maybe we don't need a new word at all, because product stewardship is all about the well-established idea of after-sales service and adding value. Business has saddled

itself with "stewardship" because it looked so good, so responsible, on the page after Love Canal, Bhopal, Seveso and other chemical disasters in recent decades.

As for the theory and practice of product stewardship, the term implies that the manufacturer will, among other things, ensure that a product can be disposed of without damaging the environment.

Industry points to examples of successful product stewardship high up the supply chain: safer transport of hazardous chemicals; cleaner production methods; safer packaging and so on. But that is the easy part.

The real difficulty lies nearer the end. If companies really practised product stewardship, they would ensure that consumers could easily give back their spent products: the paint tin, the old toaster, the dud computer, the chipped acrylic counter top.

There are, of course, examples of recycling schemes that work - but not many - and their impact is small. That is because it costs too much. You cannot expect the paint maker or the computer manufacturer to offer unilaterally a free collection and disposal service when the market will not bear the cost. Product stewardship is a non-starter without policies that prime the practice. When products reflect their full environmental costs - including disposal - the stewardship of those products will be possible.

This is an area where government has to set policy in conjunction with the producers so that everyone is playing by the same rules. Until then, there is no point in business swaggering about making all sorts of promises about cradle-to-grave stewardship when it knows that it will stumble in the cemetery.

The Responsible Care initiative was, in part, a defensive action to save the hazard-prone chemical industry from restrictive legislation. Responsibility, like stewardship, implies self-regulation. The notion stuck because it coincided with the fashion for deregulation, market mechanisms and slim-line government.

Responsible Care has certainly had a beneficial impact on the big chemical companies, improving their performance and their image.

But because Responsible Care is toothless, it encourages free riders - those companies that exploit the higher standards of the others.

If this form of discipline is going to work, the chemical industry - like all industries - will have to develop ways to get rid of the bad stewards.

Companies will never be able to fulfil their stewardship responsibilities when there are no police - whether real people or fully-primed markets that demand accountability. Until then, product stewardship will be about empty promises.

Peter Knight is a specialist writer on business and the environment.

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PHILIPS

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PHILIPS

ARTS

Britain has not just two populist general entertainment television channels, BBC1 and ITV, but three, the third being Sky 1. Most viewers are not able to see Sky channels, of course, since they are available only in homes which pay for a satellite or cable service. That is one of the reasons why so little in the way of criticism is written about the content of Sky, here or elsewhere (except in some Murdoch newspapers, Rupert Murdoch being the main shareholder in the Sky system). Given that most homes have no access to Sky, it is hardly surprising that, nationally, the Sky 1 viewing share is much smaller than those of BBC1 and ITV.

What does seem odd is that even in satellite and cable homes the old channels, according to the BARB figures, are still watched much more than Sky 1. During 1996 in such homes ITV's share has been about 23 per cent, BBC1's about 24 per cent and Sky 1's about 5 per cent. Even BBC2 and Channel 4 do better than Sky 1 with around 7 per cent each. Given that Sky 1 labours under none of the public service obligations applying to its competitors - it shows no news, education or arts programmes, very little current affairs or religion (though it does carry *The Hour of Power* at dawn on Sundays) and very few documentaries (*The World At War* is currently being repeated on Sunday afternoons) - this seems curious.

No doubt the people at Sky will say that their programme budgets are much lower than those of the terrestrial channels, but that alone is not an explanation. We all know what sort of ratings can be achieved with cheap American imports and repeats: 25 *Years Of The Two Romies* is currently pulling in 8.5 million viewers to BBC1. *E.R.* and *NYPD Blue* regularly attract over 3m viewers to Channel 4. Sky 1, on the other hand, has only one series in the entire week which manages to get above one million (*The X-Files*). Practically all its programmes fall below the half million mark. Why?

A few days dedicated to watching nothing but Sky 1 suggests a reason: to all intents and purposes this channel is not British but American. It looks American, sounds American, and perhaps most important, feels American. The chief factor is, of course, that so many of the programmes actually are American. Switch on at teatime this evening and you will see the time-travelling American drama series *Quantum Leap*, then the American cartoon *The Simpsons*, the British quiz *Jeopardy*, and then, between 7pm and the early hours of the morning nothing but American shows: *LAPD*, *M.A.S.H.*, *Space: Above And Beyond*, *The Outer Limits*, *Quantum Leap* (yes, again), *Highlander*, and *The Late Show*. The pattern on other weekday evenings is practically identical. Indeed, Sky 1 differs radically from other British networks in that it "strips" programmes across the week: thus you can watch *The Simpsons*, the second highest rated series on the network, six nights a week at 6.00 pm, with a break on Saturday for a double dose



Reach for the ratings: the pulling power of repeats is demonstrated by "25 Years of the Two Romies", currently on BBC1

Television/Christopher Dunkley

American diet on Sky

of *Star Trek*. On Sunday the dreary and often ludicrous American space opera turns up three times. Many of the other American series mentioned in the last paragraph also feature five nights a week. Perhaps this is another reason why, even in cable and satellite homes, Sky 1 takes such a small share. During four decades the British have grown used to a richer and more varied diet.

It is not that individual American series are unpopular with British viewers. On the contrary, it has been noted before in this column that, from the days of *Dragnet* and *I Love Lucy*, British broadcasters have habitually used American series to help boost ratings - but only as a minor constituent in the schedule. On Sky 1 the Americanism simply goes on and on. Even in the rare moments when there is a factual programme such as *LAPD*, the police work under examination is American. These policemen fill their patrol tanks with "gas".

They carry guns and get them out as a routine precautionary measure whatever the incident in hand. *Court TV*, which is shown every weekday by Sky 1 at 3pm, is devoted exclusively to American courts.

The only general current affairs series on Sky 1 last week was *60 Minutes* which is one of the best, and longest running, programmes of its sort in the world. However, the proposed legislation on "partial birth abortion" is American, as is the scandal over Prudential Bache and the selling of "partnerships". You do not have to be a xenophobe to find that, coming on top of a week of American cartoons, American police series, American comedies, and American science fiction, it is a bit wearing to be asked to get all indignant over the trials and tribulations of American life. British life as portrayed on television is quite worrying enough.

The very culture of Sky 1 is American. You sit through two minutes of action at the start of a drama episode, then three minutes of credits, and find yourself dropped straight into a commercial break with no indication of where the programme ends and the commercials (or the channel trails which are mixed in with the commercials) begin. Advertising fits as much as 15 minutes in the hour and, ironically, turns out to be the most British aspect of the entire operation.

Within the programmes people are forever declaring "I spent most of my life behind the eight ball" (or it could be "ate ball") or "She's in a wussy fragile state", which is hardly surprising since these programmes are made in California. But it is, surely, a bit surprising that such efforts go into making the rest of the output - even the British elements - sound thoroughly American. Not only do the announcers frequently adopt American accents, they even use American

phraseology. "You're watching *The X-Files* on Sky One prime time", they drawl, meaning, presumably, that we are watching in peak viewing time.

In an entire week of monitoring - from *The Mighty Morphin Power Rangers* (not bad if you want fast action nonsense) to *Civil Wars*, the umpteenth American court series now running on British television - only one series cropped up which appeared to be British made, not shown previously elsewhere on British television, yet which could probably hold its own and attract a sizeable audience if shown elsewhere: *Animal Practice*, an everyday story of a major veterinary centre. With calves being born by Caesarian section, an English setter dying under the knife, and a special padded room where horses can fall over under anaesthetic without hurting themselves, it looks like the British programme ideal. But it is the exception which proves the rule: Sky 1 is an American network.

something of a wild card. He is no mere accompanist, but a composer too (as one could have guessed from his searching, creative way with Wolf's glorious piano-parts), and a jazz pianist, and a specialist in improvised music.

Not many singers would put up with so aggressive a partner, but Prégardien and Banse did, to their credit - because Gees seemed to be re-creating Wolf's music from the inside. Every note counted, every moment tingled with life. (He was brusque with endings, though: once the last note of a song was struck, he was up and away toward the next.) Hearing him was an experience in itself and since it was combined with such fresh, perceptive singing, it raised the whole affair to an exciting pitch. The audience was as delighted as Lortie's had been.

London recitals/David Murray

Chopin and Wolf par excellence

With the right artists, one-composer recitals can offer special, concentrated pleasures, and this week we have already had two of them. On Sunday, the Canadian pianist Louis Lortie played all of Chopin's studies in the Queen Elizabeth Hall - the two famous books of 12 each, and the little *Trois nouvelles études* too. On Monday it was Hugo Wolf's turn, when Christoph Prégardien and Juliane Banse sang the whole of his *Italianisches Liederbuch* at the Wigmore Hall.

Lortie delivered his Chopin to a full and rapturous house. His technique is immaculate, and the more extraordinary for being utterly unshowy. Every study in the first book, Op. 10, sounded transparent and effortless: he might have been playing minor Mozart or

Haydn. He sped lightly through the wicked A minor study - endless chromatic scales, exclusively for the third, fourth and fifth fingers of the right hand - as if it were a beginner's bagatelle. By the interval, I was muttering to myself that a bit of audible stress is sometimes an advantage: in the churning F minor study, for example, or the "Revolutionary", which in Lortie's hands had been perfectly modelled, objective and rather cool. But he began his second book with the relatively easy *Nocturnes Etudes*; and suddenly, with no virtuosic challenges to meet, he was winking out the most delicate

shades of *rubato* sentiment. From there onward, he was on superlative musically ground. Everything in the Op. 25 book sang, dazzled, bewitched - still with effortless fluency but also with luminous feeling, in exquisite chiaroscuro. Better Chopin playing than this is just not to be heard, not anywhere. At the end, the audience was literally buying for encores. There being no studies left, Lortie gave us a nocturne and a waltz, both magical, and then swept exuberantly through Debussy's *L'Isle Joyeuse*.

It was only last November that Gerald Finley and Joan Rogers gave a wonderfully lively, affectionate account of Wolf's "Italian Songbook" at the Wigmore; but Prégardien and Banse were no less stylish, charming and funny. Many of the songs have to be more or less acted, which they did with less cunning - but they had the bonus of native German. Heyse's German "translations" are far more sophisticated than the original folk-Italian verses, and Wolf revelled in the words. If Prégardien's elegant tenor boasts less variety of tone than Finley's clever baritone, he phrases cleanly and confidently; and Banse's lovely, limpid timbre disguises a very sharp intelligence.

Every pair of singers in this *Liederbuch* re-orders the songs in their own way, so as to alternate between the male and female voices, and also to create some kind of dramatic continuity. This time the re-ordering was quite unorthodox: "Auch kleine Dinge", the natural prologue, began the second half instead, and the finale was not the riotous showpiece "Ich hab' in Penna", but the slightly overblown "Wenn du, mein Liebest, steigst zum Himmel auf" - which Banse and their pianist Michael Gees brought off superbly, silent-film-style tremolo and all. I fancy that the re-ordering owed a lot to Gees, who is

International theatre on tour

Laden with Euro-clichés

On the one hand, the Russians still have troves of artistic wisdom yet to reveal to the west. On the other, there are whole tips of artistic inanity in which the Russians are only too eager to immerse themselves. In the 1980s, the Kirov Ballet used to waste every minute by setting its finest dancers to tackle the pretentious choreography of Maurice Béjart, the fact that Béjart has never been better danced just did not help.

During 1994, no theatre productions fielded finer acting than those shown by the Maly Drama Theatre of St Petersburg on its British tour. But, although *Claustrophobia*, receiving its first performances in Britain, is all about the dark side of Russian life in the modern era, and although it emerged from Maly director Lev Dodin's classes, it looks to a large extent like a very thorough plunge into western Eurotrash. That some of the performing is of a high order affords all too little compensation.

On the 1994 evidence, the Maly performers are at their best in character acting, above all in revealing both social surface and spiritual essence, as in Dodin's superlative three-part staging of Dostoyevsky's *The Devils*. *Claustrophobia*, however, is not particularly concerned with character, or spirit, at all. Sure, it attempts to expose the contrast of public and private lives, of fact and fantasy, and, from this basis, it addresses the vices of modern Russia: such as collective passivity and widespread alcoholism. But *Claustrophobia*, a non-narrative two-hour collage of largely unconnected incidents, is too incoherent to be able to express effectively what it has in mind - or to express any-

thing at any interesting level. To read the programme synopsis after the performance is to be astounded. They thought that communicated all of this?

Claustrophobia is laden with Euro-clichés. In particular, it is all too like many pieces made by Pina Bausch for her Dance Theatre of Wuppertal. For example: a large and imposing box set that is gradually wrecked during the course of the work; the surreal interleaving of realistic and bizarre effects; the non-narrative assortment of group activities and more small-scale vignettes; the ballet class for people who have no talent for ballet (and singing by people with no talent for song); the episodes of bare-breasted self-exposure, of petty torture and petty masochism, and of naughtily lascivious desires, the bizarre or just plain wacky outbreaks of private or ensemble craziness... and more.

There are worse clichés: dancing to fragments of Paf songs, group nonsense to Mozart's "Elvira Madigan" piano concerto and the crescendo of Rossini's *Barbieri* overture, a bogey figure in black mask and body-tights. As in so much Euro-theatre, coarse references to the high culture of the past - the most facile feature of post-modernism - abound. Goethe, Schiller, Pushkin, Gogol, Turgenyev, Chekhov, Gorky, Debussy, Rachmaninov, Scriabin, Picasso, Mandelstam, Nabokov: just names invoked from the wreckage. Nobody doubts that life in modern Russia must be culturally grim, and *Claustrophobia* confirms that. But it is not a work of art.

Alastair Macaulay

At the Lyric Theatre, Hammer-smith, until June 8.

Star-crossed lovers

Nada Théatre's fantasy captured the imagination of Edinburgh's audiences last summer, when it won a Fringe Award. Retired for a short English tour, this French Romeo and Juliette are like refugees from a Pirandello play, star-crossed lovers trapped in their own story damned to the eternal re-enactment of their death, but never to die. This is the kind of European performance which is out of the mainstream, but feeds it at source with theatrical energy.

In a dark mausoleum, reeking with smoke and shafts of Gothic light, impassioned Romeo drinks the Apothecary's poison. Juliette, shrouded in her flowing rust-red hair, awakes on her tomb and stabs herself. After a dramatic pause, both nervously check to see if they have died at last. They have not. So they try to die again.

In an attempt to release themselves, they return to the core events of their life in their play: they try their first kiss again; they perform the ivy-clad balcony scene. The next theatrical conceit never lasts these eternal lovers to rest. However many times they may seem to die in each performance of their story, they have, of course, endured for 400 years.

A lot of the charm is in the

clowning, which is in French - the words; in the graceful body language. Coquettish Babette Masson and impish Jean-Louis Heckel also achieve a mock heroism. Sometimes, they crudely name-check the world's lovers - from Tristan and Isolde to Bonnie and Clyde. Then they are captivated; such as when, framed by medieval head-dresses, they perform an exquisite ritual between the sun and the moon.

Their cheeky, tragic eyes glow. Sometimes their performances are robust, sweaty, erotic. Sometimes dainty, particular, delicate. They play a full range of melodramatic emotion, of operatic grand passion, of balletic capriciousness - all touchstones of the forms of theatrical artifice in which love flourishes.

In the closing sequence, Romeo and Juliette walk off into the stars. Episodes of their lives float by in ethereal planes of soap-sud bubbles. Then the lovers disappear into space, through upwardly falling stardust. This is a witty, dextrous piece of theatre from romantic comedy to *l'amour propre*.

Simon Reade

Warwick Arts Centre June 5-6 (01203 524524); Leicester Phoenix June 7 (01116 255484); Oxford Playhouse June 9 (01865 798600).

INTERNATIONAL ARTS GUIDE

AMSTERDAM

EXHIBITION
Van Gogh Museum
Tel: 31-20-5705200
● Van Gogh drawings, part I: each summer for the next four years the Van Gogh Museum will publish a volume of the catalogue of its collection of Van Gogh drawings. To mark each publication, a summer exhibition will be held. In the course of this four-year period more than 500 sheets will be displayed. The first exhibition in the series is devoted to the period from 1880 to 1883; to Sep 15

BERLIN

CONCERT
Komische Oper Tel: 49-30-202600
● Orchester der Komischen Oper: with conductor Mario Venzago and Narrator Peter Schweiger perform works by R. Schumann and Wagner; 8pm; Jun 6
DANCE
Staatsoper unter den Linden
Tel: 49-30-2062861
● Le Lac des Fées: a choreography

by Pierre Lacotte after Filippo Tagliani, to music by Daniel François Esprit Auber, performed by the Ballett unter den Linden. Soloists include Scherzer, Lahiguera, Matz and Rozycki; 7pm; Jun 7, 8 (8pm)

CHICAGO

EXHIBITION
Art Institute of Chicago
Tel: 1-312-4433600
● D.H. Burnham and Mid-American Classicism: celebrating the 150th anniversary of Daniel H. Burnham's birth and his contributions in shaping Chicago's downtown district, the Art Institute presents this exhibition of approximately 100 drawings from the museum's permanent collections. Architect D.H. Burnham (1846-1912) was involved in the design of early Chicago skyscrapers such as the Rookery and several significant buildings in Chicago ranging from Marshall Field's and Orchestra Hall to the Railway Exchange and the People's Gas Buildings; from Jun 7 to Sep 2

COPENHAGEN

EXHIBITION
Ny Carlsberg Glyptothek
Tel: 45-33 41 81 41
● Byzantium. Late Antique and Byzantine Art in Scandinavian Collections: this exhibition brings together more than 100 objects from Uppsala, Stockholm, Oslo, Helsinki, Copenhagen and Odense; to Aug 31

LONDON

ART & ANTIQUE FAIR
Olympia Tel: 44-171-8033344

● The Summer Fine Art and Antiques Fair: in this international art and antiques fair, taking place in the Grand Hall, Olympia, over 400 dealers from the UK and overseas are represented. The fair is divided into two sections: the Ground Floor has a general dateline of pre-1940, whereas the Gallery Level has specialist dealers offering works, the majority of which pre-date 1890; from Jun 6 to Jun 16

CONCERT
Barbican Hall Tel: 44-171-6388891
● London Symphony Orchestra: with conductor/pianist André Previn perform works by Matthews, Gershwin and Dvorák; 7.30pm; Jun 6

EXHIBITION
Tate Gallery Tel: 44-171-8878000
● Leon Kossoff: this exhibition includes about 80 paintings by this British artist and follows the development of his work from the 1950s to the present day; from Jun 6 to Sep 1

THEATRE
Barbican Theatre
Tel: 44-171-6388891
● The Taming of the Shrew: by Shakespeare. Directed by Gale Edwards and performed by the Royal Shakespeare Company. The cast includes Josie Lawrence; 7.15pm; Jun 5, 6 (also 2pm)

LOS ANGELES
EXHIBITION
Los Angeles County Museum of Art Tel: 1-212-857-6000
● Talking Pictures: People Speak about the Photographs That Speak to Them: exhibition exploring the power of photography to document both personal history and world

history. The display includes 70 photographic works selected by participants from both inside and outside the art world, which are accompanied by comments and reactions; to Jun 9

MAASTRICHT

ART & ANTIQUE FAIR
MECC Tel: 31-43-3838383
● European Designer: the first edition of this European forum for designers and users of design. More than 400 designers from 15 European countries have joined together as exhibitors, representing design services such as product design, graphic/multimedia/communication design, interior design, public design, exhibition design, packaging and brand design, design management and design consulting; from Jun 6 to Jun 9

MUNICH

OPERA
Nationaltheater
Tel: 49-89-21851920
● Sersa: by Handel. Conducted by Noel Davies and performed by the Bayerische Staatsoper. Soloists include Ann Murray, Kathleen Kuhlmann, Frances Lucey and Christopher Robson; 7pm; Jun 6, 8

NEW YORK

CONCERT
Alice Tully Hall Tel: 1-212-875-5050
● Universe Symphony: world premiere of this work by Charles Ives, realized by Johnny Reinhard. Ives began to compose it in 1915, and ultimately left an algorithmic

series of sketches, as well as a request for someone to finish the work. In realizing Ives' symphony, Reinhard has added no additional music. The work is performed by the AFMM Orchestra, conducted by Johnny Reinhard; 8pm; Jun 6

MOMA - Museum of Modern Art, New York Tel: 1-212-708-9400

● From Bauhaus to Pop: Masterworks Given by Philip Johnson: exhibition on the occasion of the twentieth birthday of architect Philip Johnson, honouring seven decades of contributions by one of the MOMA's most dedicated supporters. The show features paintings, sculptures and drawings, as well as posters, design objects, and architectural models and drawings. In conjunction with the exhibition, Johnson has organized a special installation of works in the Abby Aldrich Rockefeller Sculpture Garden, the space he designed in 1953; from Jun 6 to Sep 3

PARIS

CONCERT
Salle Gaveau Tel: 33-1 49 53 05 07
● Debussy Quartet: with mezzo-soprano Hanna Schaar and pianist Husyin Sermet perform works by Ohana, Dancía, Fauré, Schnitt and Caplet; 8.30pm; Jun 6

EXHIBITION
Galerie Nationale du Jeu de Paume Tel: 33-1 47 03 12 50
● Un siècle de sculpture anglaise: exhibition focusing on 20th-century British sculpture. The display includes works by Henry Moore, Barbara Hepworth, Tony Cragg, Richard Deacon, Jacob Epstein, Gilbert & George, Richard Long and

Bill Woodrow; from Jun 6 to Sep 15

STOCKHOLM

POP-MUSIC
Stockholm Globe Arena
Tel: 46-8-7251000
● Tina Turner: performance by the American singer; 7.30pm; Jun 6, 7, 8

STUTTART

OPERA
Staatstheater Stuttgart
Tel: 49-711-20320
● Macbeth: by Verdi. Conducted by Gabriele Ferro and performed by the Oper Stuttgart. Soloists include Rouillon, Stadler and Zschauer; 7.30pm; Jun 6, 9

VIENNA

CONCERT
Musikverein Tel: 43-1-5058681
● Wiener Philharmoniker: with conductor Lorin Maazel perform works by Schubert and Bruckner; 11am; Jun 6

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17.30 Financial Times Business Tonight

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10.00 European Money Wheel

18.00 Financial Times Business Tonight

COMMENT & ANALYSIS



Edward Mortimer

The awkward squad

As the election of Netanyahu shows, electors have a nasty habit of voting for people who upset the international establishment

"The trouble with free elections," according to the late Nikita Khrushchev, "is that you never know who will win."

He was right. Free elections have become more fashionable since his time, and this year electorates show a disturbing tendency not to vote as foreigners think they should.

Since last December Turkey and India have produced hung parliaments with no coherent majority in which the largest party represents a form of religious nationalism regarded as unacceptable by the political establishment at home and abroad. Spain and the Czech Republic also elected hung parliaments. They are less problematic but will mean less decisive and predictable governments than the markets would like.

Albanian voters may have wanted to upset the world by voting against President Sali Berisha, a key figure in western attempts to stabilise the Balkans. We cannot know for sure because Mr Berisha, evidently a believer in the Khrushchev doctrine, took such precautions against their doing so that he himself has become an international embarrassment.

Only the Italians have behaved well, for them. No one expects them to elect a one-party government with an overall majority, but they did for once make a clear choice between two rival coalitions, and in voting for the alliance dominated by the former communists they chose the one that Italy's allies and partners are most comfortable with. How times have changed!

More tiresome was last week's performance by voters in Northern Ireland. Invited to choose delegates for all-party talks on their province's constitutional future, they responded by giving a boost to one party - Sinn Féin - which will almost certainly be disqualified from taking part in the talks by the absence of an IRA ceasefire, and to another - the Democratic Unionist party - which has made clear

it will not talk to Sinn Féin even if there is a ceasefire. While that was going on, Israeli officials were counting and recounting the votes in their country's first direct election of a prime minister. By Friday there was no getting away from it. Mr Benjamin Netanyahu had won.

This is the biggest upset yet. If there is one plea to which the international establishment unanimously subscribes, it is the importance of the Middle East peace process and the indispensable role in that process played by the late Yitzhak Rabin and his successor Mr Shimon Peres.

"Bibi" Netanyahu is verbally committed to respecting the results so far, but he and his party have denounced each stage of the process, and have made it very clear they intend to make no more concessions. They will not contemplate withdrawal from the Golan Heights - which means there is no prospect of peace with Syria, and therefore a virtual certainty of continuing hostilities in Lebanon.

They will resume intensive Jewish settlement in the West Bank. They will not even talk about the future of Jerusalem, or about allowing the present Palestinian Authority to develop into a state. Indeed



Yehsin (left) and Berisha cast their votes

Mr Netanyahu will do his best to avoid talking to Mr Yassir Arafat, the PLO leader, at all. He may well refuse even to go ahead with the agreed withdrawal of troops from Hebron next week at the very least it is likely to be delayed if he has not formed his government by then. All this makes it certain there will be more violence by Palestinians against Israelis - there were already clashes in Hebron on Monday. Mr Netanyahu is pledged to escalate this by sending troops back into the area under Mr Arafat's control if Mr Arafat does not deal with it to his satisfaction.

Mr Netanyahu's victory is a slap in the face for the international establishment, and for the Clinton administration in particular. US officials privately answered criticism of the appalling one-sided US attitude during the recent fighting in Lebanon by saying that their one overriding priority was to help Mr Peres win the election. In other words they staked everything on a horse which turned out to be a loser.

When something like this happens, the establishment swings into damage-limitation mode. People fall over themselves to discover statesmanlike qualities in politicians

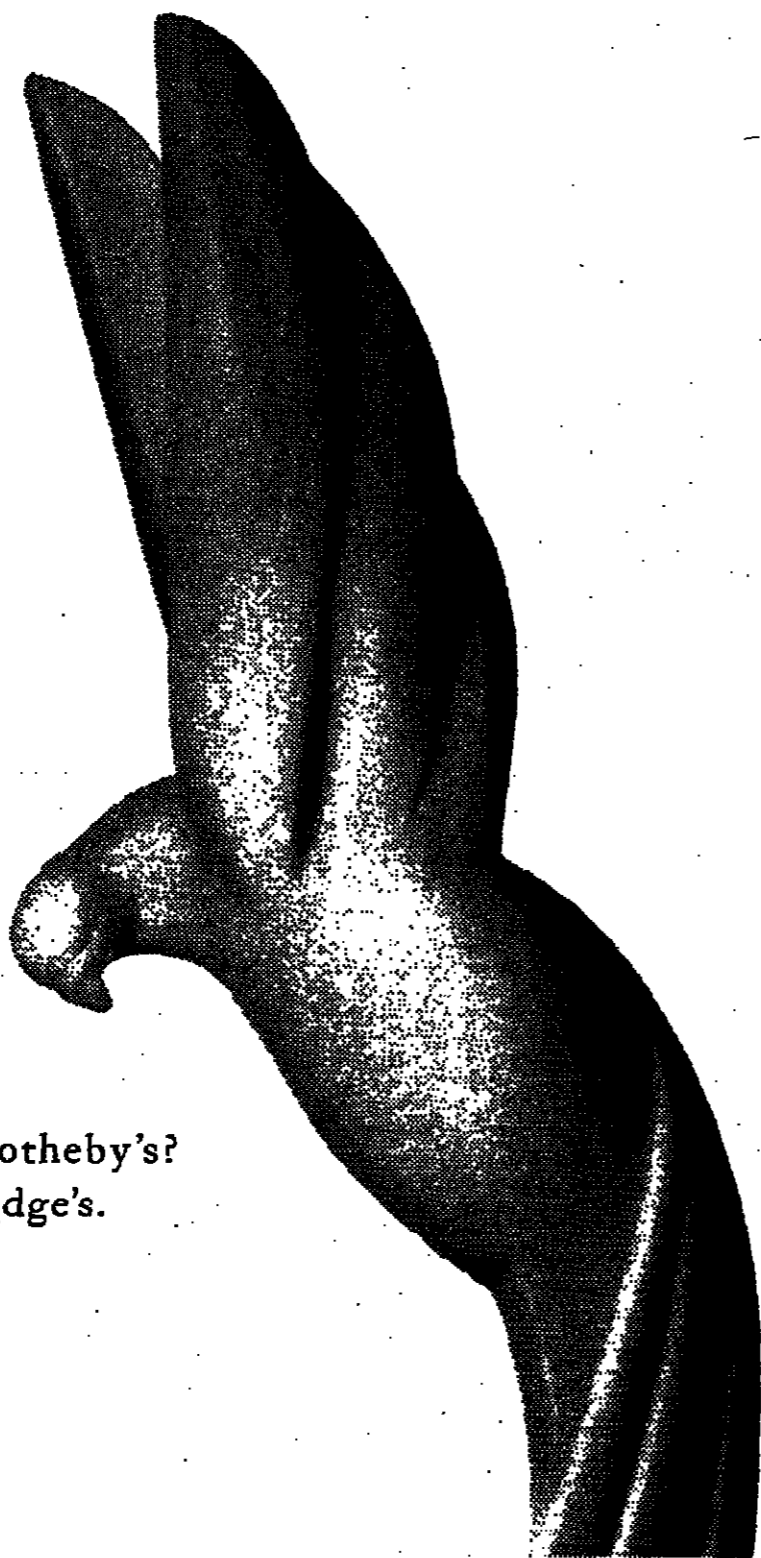
who yesterday were regarded as beyond the pale. I have not checked, but I feel sure that in January 1988 there were editorials arguing that, confronted with the realities and responsibilities of power, Herr Hitler would have to distance himself from his more intransigent supporters and more irresponsible campaign rhetoric; that he was bound to take account of the realities of Germany's international situation; that the Brüning government had been far from ideal, and Germany would benefit from a new generation and a new style of government; and, when all else failed, that "at least with these people we know where we stand".

A grotesque analogy, of course. Mr Netanyahu is not Hitler, but the elected leader of the survivors of Hitler's victims. There is no reason to think he will embark on the mass extermination of Arabs or Palestinians, or even on a programme of deliberate territorial expansion. But his concept of Israeli security will require him to hold on to the Palestinian, Syrian and Lebanese territory Israel already occupies. It could lead him to undertake a new ground offensive in Lebanon, possibly leading to a direct clash with Syria. Many Arabs, and probably not a few Israelis, will meet their deaths as a result.

His election has already been welcomed by Mr Newt Gingrich, speaker of the Republican-controlled US congress; and a Democratic president seeking re-election is most unlikely to risk a serious confrontation with Israel. Until November, at least, and probably beyond, Bibi and his colleagues will have a free hand. It would be surprising indeed if there are no Arab provocations for them to respond to.

Meanwhile, we can all get into practice at looking on the bright side. We shall need that, if the fashion for upsetting the international establishment is followed by Russian voters next Sunday week.

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The V&A? Sotheby's? No, Claridge's.

EDITOR

Software skills can match chip development

From Mr Martin Thomas. Sir, Your leader, "Chips galore" (May 29) correctly forecasts that computer processors will continue to double in power and halve in price every two years for the foreseeable future (Moore's Law). You are on less firm ground with your comments on software.

well understood for two decades. You say that progress in software is slow and shows little signs of accelerating, but this is not my experience of the past 30 years. The UK software industry can now produce software more cheaply and more quickly than ever before, and provides solutions to business problems that would have been impossible large or complex in previous decades. We can develop systems that are highly reliable, and which provide a continuous, secure service. Where the application demands the highest assurance we can prove that the software meets its specifications, using

mathematical techniques and special software tools. Unfortunately, too many software projects still fail. Often, this happens because software development is seen as a low-skill craft, rather than one of the hardest (because most abstract) engineering disciplines. While companies continue to hire contract programmers to develop their systems, instead of calling in consultant engineers to manage the whole project, these expensive failures will continue. Companies have long recognised the important role of architects and consultant engineers in construction projects. With computer systems destined to become

even more pervasive and fundamental to society, it is time that software development and systems integration became recognised as an engineering profession, and that purchasers started questioning the qualifications and engineering credentials of their suppliers. Then we shall be able to realise the benefits of Texas Instruments' breakthrough for wide creation and improved quality of life. Martin Thomas, managing director, Praxis, Deloitte and Touche Consulting Group, 20 Manserv Street, Bath BA1 1PX, UK

The politics of welfare 'benefit'

From Mr Eugene Hammons. Sir, When will Patti Waldmeir and her like realise their mistake when assuming the welfare system in the US "benefits" anyone, especially blacks and Hispanics. ("A handout away from the president", June 1/2). Crime, domestic violence, illegitimacy and hopelessness have all grown disproportionately to the growth of the general population as more and more federally sponsored welfare spending has stimulated their very existence. Bob Dole understands this, and he apparently had something to say about the causes and remedies of domestic violence. And where else should he deliver such a message but where the problem exists? It would be considered less than courageous for him to have addressed the subject of domestic violence in the elite Chicago Club than where the violence actually takes place. Unfortunately, we will never have the privilege of knowing the content of his speech because Waldmeir and others who report on such happenings are more bent on talking about his seeming lack of "feeling the neighbourhood's pain" than the substance of his ideas. The truth is Bob Dole knows pain in a way that President Bill Clinton cannot even begin to imagine. No, Mr Dole cannot produce tears on demand as can Clinton. In a way that fairly defines the campaign, substance versus falseness and guile.

Eugene Hammons, 11539 Palestine Road, Breckenridge, Texas 77833, US

Mandatory sentencing is correct response to crime

From Mr P.J.R. Preston. Sir, Mark Suzman's article "The rights and wrongs of locking up more criminals" (June 1) is extremely biased towards the establishment viewpoint. For the most part their views have been moulded by an upbringing in a different, more affluent, milieu, resulting in their very limited appreciation of the reasoning of the majority of people. It is the duty of parliament to enforce the majority will and if this is what Michael Howard, the home secretary, is doing then, no matter what his ulterior motives, he is undoubtedly doing the right thing. The cost of crime detection, prosecution and punishment bears hardest on the ordinary worker, who can least afford to install protective devices and have adequate insurance cover. Their actual standard of living is affected by crime, more so than that of the

Land is ours

From Ms Elizabeth Herzog. Sir, I am somewhat confused by the FT's repeated use of the adjective "Arab" every time it employs the word "land(s)" when describing territory lived in by Jews in Israel. When writers refer to California, do they call it Mexican land, or, for that matter, is America ever referred to as Indian land? How about the Falkland Islands being called Argentine land, not to mention the Irish land of Northern Ireland? Jews in Jerusalem are celebrating 3,000 years of Jewish presence in this land. After repeated invasions by Persians, Greeks, Romans, Arabs, Turks and British, the majority of us have returned to reclaim that which was ours under the Davidic dynasty. The Arab occupation of our land was just another blip in history. Elizabeth Herzog, 7 Daskin, Jerusalem 96440, Israel

Fortunes made by Russia's former communists

From Mr K.R. Tidmarsh. Sir, Anders Aslund (Europa column, May 31) has quite correctly outlined the principal methods by which some Russians have made fortunes, since the break-up of the Soviet Union of his ideas. But when he refers to the frequent attribution of blame to "reformers" for the resulting social inequalities he fails to point up a factor which is often missed in the west. This is that it is not a question of which techniques were used for such enrichment or who were the particular reforming politicians responsible for the massive creaming-off of Soviet wealth. The point surely is that the

Personal View - Niall FitzGerald

A European nightmare

Since membership of the EU is vital for UK business, withdrawal is not a serious option

Nothing keeps me awake at night. And only rarely do I have nightmares. But I dreamt the other night that there was serious talk in this country about the UK leaving the European Union, that seemingly sensible people were actually claiming the UK would be better off outside, and that the British government had announced a policy of non-co-operation on single market legislation.

The real nightmare started when I woke up, and found it was true. As a businessman I cannot believe that people are actually thinking the unthinkable. It is fundamental to the economic success of the UK that it remains not just part of, but at the heart of, Europe.

That is why present government policy over the ban on British beef concerns me. I am not, of course, privy to the details of the precise negotiating dynamics, and therefore cannot give an informed opinion on the likely effectiveness of the approach.

But judged from outside, this policy is not helpful to British business interests in Europe, and - if sustained - will be harmful. I can, therefore, only hope that the policy of non-co-operation will be brought to a halt, especially now that the ban on UK exports of beef derivatives seems about to be lifted.

Such an approach also gives succour to those siren voices who wish to lure the British on to the rocks of withdrawal. It angers me when politicians in particular indulge themselves in such talk without taking any responsibility for the horrific economic consequences of such a step. They do not know what they are talking about.

Much of Britain's prosperity derives from its industry and business being an integral part of Europe. The UK is part of one of the world's three great trading blocs, a single market of 370m consumers responsible for 40 per cent of world trade. To think it could prosper outside the EU is to ignore the facts.

It is, for example, naive to claim that Brussels would be unable to impose tariffs on goods and services imported from a newly-departed Britain because of the World Trade Organisation. It is not just about tariffs. The EU would naturally draw up rules of trade to suit its needs - not those of outsiders.

And it is nonsense to suggest that multinationals have been investing in the UK simply because of language and improved labour relations. The truth is they have been coming to Britain because it is a competitive entry point for Europe. It was crucial for them to invest, and Britain was simply the best place to be for access to the ECU.

entire process was devised and operated by the former communist party intelligentsia. It is now largely the same communist apparatchiks who have simply changed their caps to become the new capitalists. Those who used to be powerful by virtue of their influence in the party have now acquired even greater power - and certainly security - through their new-found financial clout.

According to a recent study by the Institute of Sociology of the Russian Academy of Sciences, the overwhelming majority of the new Russian elite are former members of the communist party "nomenklatura". Right across

Russian society the bulk of the financial and political elite are former apparatchiks - 75 per cent of the presidential entourage, 74.3 per cent of top civil servants and 61 per cent of the leading business people. The newspaper "Investia" has just published a revealing report on the city of Briansk where all the commanding heights of local industry were taken into their own hands by local communist party officials - through a systematic "privatisation" operated by the regional governor, himself communist.

K.R. Tidmarsh, Villa Malore Tont, 1286 Miles, Switzerland

It is irresponsible to claim there is a serious case for UK withdrawal from the EU and then choose to ignore the reality of the economic consequences

The single market has probably been the most important boost to European competitiveness over the past 10 years. It has given companies the ability to operate on equal terms in an open business environment, and to pass on that benefit to the consumer.

Take my own company, Unilever. About half our annual turnover of \$28bn (\$30bn) is in Europe. Over the past five years, the prices of many of our products have actually fallen because of the cost reduction coming from the more effective and harmonised organisation of our operations across the EU. Europe also gives us the solid base we need from which to trade globally, producing resources for us to invest elsewhere in the world.

The single market is a great stimulus to productivity and the UK throws it away at its peril. That really is the heart of the argument. The British must not allow it to be deflected by wrangling over issues like "Banx" and a single currency. The completion of the single market does not depend on a single currency.

The 1975 Euro-referendum only really started to swing towards entry when business engaged in the debate. Our arguments had more substance than those of the politicians. It is again necessary for us to spell out the harsh realities of life and forgo misty-eyed romanticism.

Withdrawal from the EU is not an option. That message must be shouted from the rooftops. The pragmatic voice of business must be heard.

The author is the chairman-designate of Unilever and chairman of the Confederation of British Industry's Europe Committee.

Handwritten signature in a box at the bottom of the page.

COMMENT & ANALYSIS

FINANCIAL TIMES

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Tel: +44 171-873 3000 Telex: 922186 Fax: +44 171-407 5700
Wednesday June 5 1996

Blessed are the weak

Every dog has his day - and so, it appears, does every currency. For some time now, the currencies that have been having their day are indeed the dogs - the US dollar, the Italian lira, the pound sterling, the Spanish peseta, and all the weaker European currencies. Meanwhile, pedigreed canines, such as the Japanese yen and the German D-Mark, have been rather feeble. Why has this happened? Can it last? And should the owners be pleased?

Back in April 1995, finance ministers and central bank governors of the Group of Seven leading industrial countries decided the dollar had become too weak. Whether by luck or judgment, their wishes were the markets' command. By yesterday, the dollar had risen to Y109 and DM1.53, revaluations from its trough of 95 and 18 per cent, respectively.

When the dollar strengthens, other traditionally weak currencies show up courage as well. The Italian lira, for example, plummeted from 750 to the D-Mark in the summer of 1992 to over 1,950 in April 1995 - a devaluation of 40 per cent. It has since recovered to 1,008. Similarly, the pound fell from DM2.80 in the summer of 1992 to DM2.18 in May and November 1995 - a devaluation of 22 per cent. Yesterday, it was back to DM2.37. The revaluations of the lira and the pound from their low points against the D-Mark are 25 and 9 per cent, respectively, almost too much of a good thing.

vinced the weak currencies have reached a temporary bottom, they seek yield. They continue to do so until the combination of declining yield and appreciating currencies makes them more aware of the currency risk, whereupon they switch their focus again.

There is more to it, however. Because the weakness of the German and Japanese economies is now seen to be deep-seated, lengthy periods of relatively loose monetary policy are required. Still more fundamentally, in a world of low inflation, revaluations no longer bring disinflation and swift returns to external competitiveness. They deliver, instead, the threats of deflation and long periods of uncompetitiveness.

Political judgment

Within Europe, there is another force at work - the credibility of economic and monetary union. This is a political judgment by the markets, not an economic one, since so far only Luxembourg, Ireland and Denmark qualify - none central players and the latter two only by finessing the public debt criteria. Yet that political judgment may well be correct.

Can the turnaround last? No, because it never does. What might create a change in perspective? A strong recovery in Germany and Japan, leading to expectations of higher short-term interest rates, renewed growth of Japanese exports to the US, or worries about whether the entry criteria for Euro will be judged after all.

On balance, people should be moderately pleased by what has happened, since the present concatenation of interest rates and exchange rates should lead to more balanced growth within both the world and European economies. The French and Germans should also realise that their phobia about the perpetual currency weakness of the likely Euro outsiders has been greatly exaggerated.

The Italians can now see a good economic reason for putting the lira back in the ERM, namely to keep it down. And Mr Clarke will find it easier to justify lower interest rates. An era when owners of pedigree currencies want them to be feeble brings many advantages. Enjoy them while they last.

Collapsed differential

The revaluation of weak currencies has been quite general. Every ERM member currency is within its old narrow band against the D-Mark. The French yield differential vis a vis German 10-year bonds has disappeared. The Italian differential has collapsed from a peak of 6 1/2 percentage points last year to only a little over 3 percentage points. The differential on British gilts is an exception to this general trend, however. It has tended to rise and is now 1 1/2 percentage points.

The most obvious explanation for this marked turnaround in the fortunes of the historically weak currencies is that markets cannot walk and chew gum at the same time. When investors are con-

Airport profits fly too high

BAA, the UK airports operator, has a high international reputation and invests heavily on improvements, but the public pays a price. Because of the peculiar way in which it is regulated, the company makes more money than a monopoly ought to make. And it is hard to determine how far profits could be driven down without curbing its desire to invest.

This is one question which the Monopolies and Mergers Commission must answer in its five-year review of BAA, due to be completed next week. Tight price controls are desirable, but more radical ideas for curbing monopoly profits are now needed, particularly by introducing competition.

The MMC will suggest what caps should be placed on BAA's charges to airlines for the next five years. The Civil Aviation Authority, which is not bound by the MMC's views, will then publish its own recommendations.

The 1981 review drew attention to the anxieties of airlines and passengers that the present framework of charges gives BAA insufficient incentive to invest in terminal facilities. It can boost profits by squeezing ever higher volumes of traffic through its existing facilities. Moreover, the problem of determining the cost of capital, common to all utility regulation, is particularly hard in the case of airports as there is no competitor with which to make comparisons.

The result of these shortcomings of regulation is that BAA's profits over the past five years have been higher than expected. They are also high compared to the profits of many airlines.

ken up unless it believed that the company was operating against the public interest - a rather severe test. The Government might need to refer this issue specifically to the commission.

Nevertheless, the options need to be explored. One possibility would be to break up BAA into separate companies for each airport. Unfortunately, passengers show such an overwhelming preference for Heathrow that landing charges there would have to be raised substantially for competition to be effective. And since capacity is limited at Heathrow, Gatwick would be a profitable monopoly with little incentive to compete by improving levels of service.

Competitive tenders

An alternative would be to beef up competition within an airport. BAA already holds competitive tenders for many services such as airport shops, but it keeps the monopoly rents. This is not a very satisfactory system, since these profits are only regulated indirectly. When the price cap for landing charges is fixed, all other expected revenues are taken into consideration. Under this "single till" system, revenues from duty free shops effectively subsidise landing charges. Since this is the system adopted by other international airports, it might be difficult to unscramble. Nevertheless, it should be looked at.

A more hopeful possibility would be to hold a competitive tender for the building of the projected Terminal 5 at Heathrow, assuming planning permission can be obtained. The successful bidder would become an independent operating company within the airport. It would need some protection from the regulator, for example, to ensure that runway charges were not stacked against it. Such regulatory problems can be solved, as has been shown in other industries, notably gas and telecommunications.

If this were done, the public would have a much clearer idea of the demand for a new terminal and of what it should cost. And there would be no need to allow BAA to collect huge piles of cash ready to bury under tarmac.

Licensed monopolies

Regulation can continue to tighten the caps on traffic charges. However this revenue now represents only about a third of BAA's total turnover. The best way to improve incentives for efficient investment would be to increase competition.

This will not be easy. The first obstacle is that, unlike other laws which govern licensed monopolies, the 1988 Airports Act does not say that the CAA must encourage competition. So in this review, the MMC could not recommend that the BAA should be bro-

A hidden hand of corruption

Peter Norman on Germany's plans to raise the penalties for corrupt business practices, one of the country's few fast-growing activities

A glowing future seemed assured for Mr Hans Jakob Zimmermann, a leading executive with Thyssen, the German steel and engineering conglomerate. But late last year he was forced to resign for using his company's services and those of a leading supplier, Hochtief, to rebuild his Essen home at bargain basement prices.

Several hundred kilometres to the south in the state of Baden-Württemberg, the rector of Offenburg technical university has been suspended from office and is appealing against being found guilty of awarding a degree to a student in return for his restoring the professor's classic car.

Welcome to Germany, a country that has traditionally prided itself on being clean but where corruption is now one of the few fast-growing economic activities. News of financial irregularities have become almost a daily event - as shown by recent heavy losses at Klockner-Humboldt-Deutz, the engineering group, and Bremer Vulkan, the shipbuilding company that declared bankruptcy in April. But the growth in cases of outright corruption has worried Chancellor Helmut Kohl's government to the extent that it is proposing a steep increase in the penalties for those convicted.

"We have pretty clear indications that corruption is growing compared with a few years ago when it was almost a foreign word in Germany," says Mr Rupert Scholz, deputy leader of Mr Kohl's Christian Democratic Union in the Bundestag. "We want to address this problem and will bring a package of measures before parliament, probably in the coming weeks."

At first sight, Germany seems to have little to worry about. Last weekend, the 1996 corruption perceptions index, produced by Transparency International, a Berlin-based pressure group dedicated to fighting worldwide corruption, ranked Germany as the 18th most virtuous country out of 54. The index, which reflects the perception of international business executives about corruption in particular countries, put New Zealand at the top as the cleanest country and Nigeria at the bottom.

The federal criminal office in Wiesbaden recently reported that cases of bribery and corruption involving officials fell to 2,675 last year from 3,263 in 1994. The clear-up rate in 1995 was 98 per cent.

But the official statistics take no account of corruption that remains undetected. In many cases, there is no obvious victim to file a complaint - so those that come to light are the exception rather than the rule, emerging by chance or because the participants fall out and betray each other.

The Transparency International league table also tells only part of the story. The organisation defines corruption as "the misuse of public power for private benefits" through activities such as bribing officials, kickbacks on the awarding of public contracts and embezzlement.

The index therefore scores the behaviour of public officials and politicians who are mainly on the receiving end of bribes. It takes no account of the role of exporting companies in big trading nations such as Germany, which contribute significantly to growth of corruption in developing countries.

And the index excludes corruption in relations between companies such as that which ended Mr Zimmermann's career. Yet according to Mr Fredrik Galting of Transparency International, "the common



form of corruption in Germany is between private firms".

In a recent study, the federal criminal office admitted that "knowledge about corruption is extremely limited in Germany compared with other states". This is hardly surprising because public prosecutors began to take the problem seriously in the late 1980s.

It was only in 1986 that Mr Wolfgang Schauensteiner, Frankfurt's top anti-corruption prosecutor and doyen of a small group of officials committed to combating corruption, began investigating cases. His first investigation into bribes paid by building companies to officials in connection with public works contracts found bribery on a "Sicilian scale" and confirmed that corruption was endemic in the construction sector.

Since 1987, Mr Schauensteiner has started proceedings for 1,624 cases of bribery or the acceptance of bribes and secured more than 300 convictions. "The cases only come to light when you have specialists at work," he says. Yet a decade after beginning his campaign, he has only three prosecutors working with him, to cover the "Rhineland" industrial and banking region around Frankfurt.

This lack of resources is not unique. In Munich five managers from Siemens, the electrical and electronics company, were convicted in 1992 for dispensing bribes totalling DM3.24m in connection with a DM108m contract for equipment in the city's sewerage works. Other successful prosecutions have followed, yet the city has just seven public prosecutors pursuing corruption. "Germany is a long way from having a corruption unit in every big town or urban area," Mr Schauensteiner says.

As a result, there is little to hin-

der corruption in much of the country. The former communist east Germany has proved to be a particularly fertile field for corrupt activities, according to Mr Werner Rügemeier, the author of a forthcoming book on corruption in Germany and abroad. He says there were numerous indications of "on average, a high level of criminal energy" among some of those who worked for the government in privatising the eastern economy.

As in most societies, there has always been some corruption in Germany. "People having their house built by their employees, that is business as usual," says Mr Dieter Lohse, the head of KPMG's international forensic accounting network for Germany in Berlin. But Mr Lohse senses a qualitative change because of the growing number of forgeries of documents and invoices and balance sheets.

Mr Scholz also detects a new quality in German corruption, which he links to the Europe-wide problem of organised crime. "We have found that Mafia-like organisations are targeting public bureaucracies with the aim of exercising corrupt influence - and we must put a stop to that quickly," he says.

The economic downturn is not helping. "Times get tougher; that increases temptation and the inclination of people to be corrupted," Mr Scholz says. And the high marginal tax rates in Germany's complex income tax system may encourage people to seek tax-free income through corruption.

There is also evidence of a culture of denial on corruption and financial malpractice. Germany registered a particularly low fraud awareness in the 1996 KPMG international fraud report, which was based on national fraud surveys in 18 countries. Asked whether fraud

was "a problem", 70 per cent of German executives polled either did not respond or were not sure. The KPMG report noted this was despite "a number of large publicised frauds reported in Germany within the last decade".

Mr Schauensteiner argues that the ability of German politicians to survive incidents that would lead to disgrace or worse in more rigorous societies undermines morality and encourages corruption. He cites the case of Mr Otto Lamsdorf, the leading Free Democrat politician who was fined DM150,000 in 1987, for tax evasion and assisting tax evasion in connection with construction made by the Flick industrial group to his party. Mr Lamsdorf resigned as economics minister in 1984 before the affair came to court but his trial and conviction did not prevent his subsequent election as party leader.

Tax rules which enable companies to treat bribes as a tax-deductible expense are another factor, according to Mr Rügemeier. The Siemens case came to light only when a young tax official refused to accept a subcontractor's payment of DM100,000 to a city official as a legitimate expense.

The government maintains domestic bribes ceased to be tax-deductible in January. But Mr Schauensteiner says companies still claim bribes as tax-deductible expenses. And bribes for contracts abroad are unaffected by the recent change in the law, according to Mr Rügemeier, allowing payments to officials in Germany to be channelled through foreign intermediaries.

The government plans to increase penalties for bribing officials. Certain misdemeanours under the law

against unfair competition will be upgraded to criminal offences - including price-fixing by companies competing for public contracts.

The maximum jail sentence in cases of corruption between companies is to be raised from one to three years - with the possibility of five years in extreme cases. Judges guilty of serious bribery offences could face up to 10 years in jail.

To reduce opportunities for corruption in the public sector, the justice and interior ministries have proposed the separation of planning, awarding and payment for public contracts. They have also suggested the establishment of contact points where whistleblowers can report suspicions and the rotation of personnel in areas prone to corruption. Government officials are to be forbidden from accepting gifts linked to their job.

One suggestion - opposed by business - is a central register that would allow companies known for corrupt practices to be barred from competing for public contracts.

Germany has much to gain from cleaning up its act. Although there are no reliable figures, Mr Schauensteiner estimates that bribery in relation to public works contracts amounts to DM10bn a year. Mr Rügemeier estimates some DM7bn flows abroad in legal, untaxed bribes linked to foreign trade.

The country's politicians feel that the country is still a good deal cleaner than most of its rivals. "Seen internationally, I am convinced that we still have relatively healthy structures," Mr Scholz says. But as the known cases of corruption are only the tip of an iceberg, they are likely to avoid complacency.

"Wirtschaften ohne Korruption?" to be published by Verlag S. Fischer of Frankfurt in September.

OBSERVER

Cap'n Crunch man

A happy newsroom is an oxymoron, as Mark Wiles has discovered in the year since he took charge of Times Mirror, care-worn publisher of the Los Angeles Times.

The mood remains sour long after his first wave of cuts, which closed loss-makers, shrank the group's reporting and editing corps, and earned Wiles the pet name of "Cereal Killer" - by virtue of his past at General Mills.

Aka "Iron Wiles", he replaced with cheap outsourced toughies the in-house security guards who protected employees making the perilous evening pilgrimage from the office to the staff car park.

But it's a different story on Wall Street, which has been enchanted by the speed of the turnaround, as first quarter operating profits leapt 90 per cent. Analysts will probably be pleased by the aggression - shown in Monday's 50 per cent cut - to 25 cents - in the LA Times main edition cover price.

The Cereal Killer has almost as many snappy ideas as the grumpy phrasemongers on his payroll.

Raisa's rag trade

Looks as though Mikhail Gorbachev has thrown in the towel, after all. Well,

bravely picked as winners, the board has never suffered from a surfeit of profits, or fans.

Tory radical John Redwood, always flamed in attack, at least, penned "The National Enterprise Board: The Case for Eurasia" just a year after the board's creation.

Even though the best of the board's collection of patents and stakes was bundled into the private British Technology Group four years ago, the shell survived under Heseltine. No longer. Just in time for Labour to start it up again.

Champions lose

First we had Ian Lang the Trustbuster, enemy of the would-be giants of the electricity industry. Now we have Lang the scourge of national champions. To run home now who opposed he is to the doctrine preached by his predecessor Michael Heseltine, the UK industry secretary will today abolish the National Enterprise Board.

Created just over two decades ago by Labour to invest in companies which ministers had

economic figures on the region as "unfortunately, the Israeli authorities have never published separate statistics".

And its guide to "Doing business in the West Bank and Gaza" cautions that "most British firms enjoy a good reputation but regular visits are essential", and that "price rather than quality is a deciding factor when obtaining contracts".

You have been warned.

Khaki-chip stock

You cannot fault Yassir Arafat on optimism. His officials may have spent the past week warning that peace is doomed if the new Israeli government sticks to its election slogans.

But the president of the Palestinian National Authority spent yesterday morning at the Department of Trade and Industry courting British business.

In khaki garb not often seen in the DTT's corridors, Arafat could offer business folk his own hands-on experience. He had lent a hand as an engineer, he said, to build the new "Rafah international airport", well, airstrip, from which his trip began. And put in for overtime pay too.

The DTT briefing was rather less down to earth. It could offer no

economic figures on the region as "unfortunately, the Israeli authorities have never published separate statistics".

And its guide to "Doing business in the West Bank and Gaza" cautions that "most British firms enjoy a good reputation but regular visits are essential", and that "price rather than quality is a deciding factor when obtaining contracts".

You have been warned.

Hunger strike

Bouygues, the French construction giant, certainly knows how to make its press conferences more palatable. Hacks invited yesterday to the grand headquarters outside Paris - to chew over the (already announced) 1995 results and to savour the prospects for coming months - were piled with file d'agneau au croissant aux herbes, preceded by a salade de confit de canard à l'ouf poché.

While journalists tucked in, Martin Bouygues, the company's chairman, spent the entire time standing in a corner fielding questions - without so much as a morsel to sustain him.

If he displays half as much fortitude and self-control in addressing the company's problems - losses in 1995 amounted to FF2.9bn - investors probably don't have much to worry about.

Financial Times

100 years ago

The Argentine Republic From the Speech of President Urburu at the opening of the Argentine Congress: "The Republic enjoys peace, both at home and abroad. Our relations with Foreign Powers are on a footing of frank cordiality. We have no diplomatic reclamations to deal with; those we had have been satisfactorily solved. Amongst international questions the most significant has been that of our demarcation of the frontier-line with Chile, and the arrangements arrived at prepare practical solutions for any difficulties that may arise. Any differences concerning the location of boundary land marks in the Cordillera, which may not be solved in a friendly way, are to be submitted to the arbitration of Her Britannic Majesty."

50 years ago

Many Copper Plants Closed The supply of copper in the United States is becoming critical, and many manufacturers' plants are being forced to shut down for lack of copper. The new ceiling price has confused copper producers owing to the fact that the increase is allowed only to those producers who have reached new wage agreements with workers, and have had the agreements ratified by the proper Government authorities.

Weeks, Awards, Awards... We should be called Radisson AWARDS

FINANCIAL TIMES

Wednesday June 5 1996

FRUEHAUF TRAILERS Carrying the nation's goods

Move marks vote of confidence in long-term future

Tokyo backs \$300m loan for power plant in China

By William Dawkins in Tokyo

The Japanese government has granted a \$300m official loan guarantee to Japanese contractors working on a 20-year power station project in southern China...

The work, and the finance is provided by the Keiretsu bank, Bank of Tokyo-Mitsubishi. A ministry official said final details had yet to be agreed...

Italy is the first, with a power station in the Philippines five years ago, followed by Nishu Iwai and Itochu elsewhere in Asia.

IRA rules out fresh ceasefire before talks start

By John Kampfer in London

The IRA yesterday ruled out any prospect of restoring its ceasefire from terrorist activities before the start of next week's all-party talks on the future of Northern Ireland.

In London, ministers are assuming that the statement was not simply issued as a bargaining chip. Recent weeks have not seen the impetus towards a cessation of hostilities that was evident in the run-up to the original ceasefire of August 1994.

The UK and Irish governments were last night on the point of agreeing an agenda for the talks, with London appearing to drop its resistance to a powerful role for former US senator George Mitchell.

Sir Patrick Mayhew, the UK Northern Ireland secretary, was hosting his second meeting of the day with Mr Dick Spring, Ireland's deputy prime minister, to resolve outstanding differences.

Both governments have made clear that Sinn Féin will not be allowed to attend the talks unless the IRA, its military wing, restores the ceasefire it broke in February.

Sir Patrick yesterday formally invited nine of the 10 parties who qualified during last Thursday's Ulster elections for places in the Northern Ireland forum.

Pan-European media alliance seems close to falling apart

By Raymond Snoddy

One of Europe's most ambitious media alliances, bringing together Bertelsmann of Germany, British Sky Broadcasting and Canal Plus of France, is in danger of falling apart before it has properly got under way.

\$300m (\$450m), could fall apart in its present form. One of those involved last night described the situation as "serious".

digital television in other European countries, such as Italy. Attempts to create transnational groupings in the media have proved unstable in the past.

Personal computer makers in merger deal

Continued from Page 1

subsidiary. The portions of NEC's PC business to be merged with Packard Bell are relatively small and comprise primarily the company's US laptop computer business.

change the current shareholding structure, with the founders of Packard Bell, NEC and Bull retaining their current equity positions. NEC and Packard Bell said the newly merged company would go public in about two years.

market leader. Packard Bell, which has been struggling to make a profit, described the merger as the "next logical step" following NEC's earlier investments.

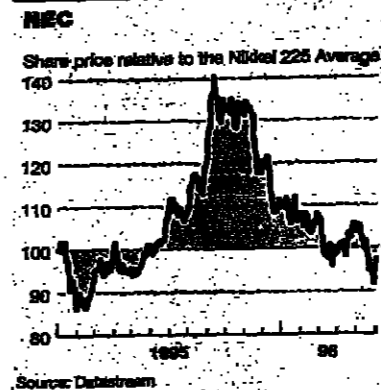
Even as chairman, Mr Mitchell would be asked to concentrate mainly on the issue of decommissioning paramilitary weapons, which will be discussed in a sub-committee of the main talks.

THE LEX COLUMN

PC union

The proposed merger of Packard Bell Electronics with NEC's personal computer operations outside Japan ties up some loose ends, but - whatever the claims - the result will be something short of a global PC business.

FT-SE Eurotrack 200: 1729.3 (+3.3)



longer-term future of its drinks business. The stake has been acquired by Coca-Cola's bottling arm, Coca-Cola Enterprises (CCE), which has been busy acquiring bottling plants throughout Europe.

Vodafone

To say Vodafone's results were above expectations is a rather back-handed compliment when expectations had fallen as they have. And although a 30 per cent increase in earnings is respectable, a big chunk of this comes from an exceptionally sharp reduction in bad debts; sales in the UK are growing at a less dramatic 15 per cent a year.

Deutsche Telekom

Yesterday's results from Deutsche Telekom shed little light on the two issues crucial to the group's planned flotation in November. The first is the shape of the regulatory playing field.

Cadbury/Coca-Cola

It might seem bizarre for Cadbury Schweppes to sell a bottling business that dominates the UK soft drinks market, but the drinks to confectionery group has got a sweet deal.

If this were the whole picture, the shares' lofty multiple - 25 times last year's earnings - would be impossible to justify. The question is whether the undoubted prospects of Vodafone's international portfolio are enough to make up the gap.

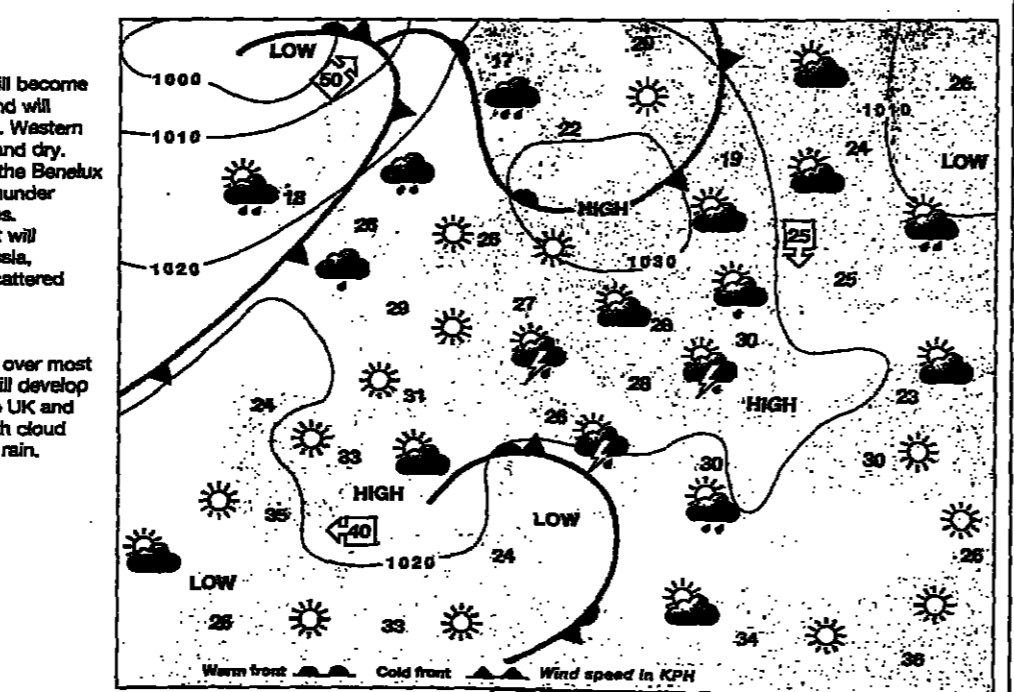
FT WEATHER GUIDE

Europe today

Southern Scandinavia and the UK will become warmer. Norway, Scotland and Ireland will remain unsettled with cloud and rain.

Five-day forecast

High pressure will promote sunshine over most of the continent. Thunder showers will develop in Italy during the next few days.



TODAY'S TEMPERATURES

Table with columns for location, maximum, and minimum temperatures for various cities.

Situation at 12 GMT. Temperatures maximum for day. Forecasts by Meteo Consult of the Netherlands

Table with columns for location, weather, and temperature for various cities.

Lufthansa logo and slogan: The airline for people who fly to work.

Advertisement for Gleacher NatWest Corporate Finance Excellence in North America, featuring logos for RJR Nabisco, MFS, The Dial Corp, and Farnell.

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FINANCIAL TIMES COMPANIES & MARKETS

NU-WAY MAKING A WORLD OF DIFFERENCE
WOLSELEY The name is the quality

© THE FINANCIAL TIMES LIMITED 1996 Wednesday June 5 1996

IN BRIEF KLM-Northwest link hits snag

KLM Royal Dutch Airline's partnership with the US carrier Northwest Airlines received a further setback yesterday when KLM announced it had suspended plans for the integration of the two airlines' global cargo operations. Ironically, Northwest enabled KLM to report a healthy increase in net profits last year. Page 18

Vig poised to bid for Sandoz arm
Vig, the German industrial conglomerate, is set to bid up to DM1.4bn (\$917m) for Master Builders Technology (MBT), a subsidiary of Sandoz the chemicals company. If successful the move would create Europe's largest building chemicals company, with sales of more than DM5bn. Page 18

Philips seeks to calm job fears
Philips, the Dutch consumer electronics company, quashed speculation that it had planned to shed several thousand jobs in its consumer electronics division over the next few years. Page 18

Deutsche Telekom rises 47%
Deutsche Telekom, the German telecoms operator to be partly privatised in November, yesterday reported a 47 per cent increase in net profits to DM5.3bn (\$3.47bn) but warned that sales this year were expected to be 10 per cent lower and would dent profits. Page 18

Air NZ deal with Ansett to take off
New Zealand's Commerce Commission has cleared the way for Air New Zealand, the national carrier, to buy a 50 per cent stake in Ansett of Australia. Page 20

LA Times halves cover price
The Los Angeles Times has halved the cover price of its main edition to 25 cents in a move to reinforce its position in its core market. Page 21

Sears head defends shoe shop sales
Mr Liam Strong, chief executive of Sears, defended his board's decision to sell 379 unwanted shoe shops to Pacia Group, where trading activities are now in the hands of administrators and receivers. Meanwhile Sock Shop, the UK retailer yesterday collapsed into insolvency proceedings. Page 22

Eurotunnel chief upbeat on refinancing
Hopes of a prompt settlement to Eurotunnel's refinancing talks were raised yesterday when Mr Patrick Ponsolle, the Anglo-French group's co-chairman, said it was "not unrealistic" for an outline refinancing plan to be in place by the group's annual meeting on June 27. Page 22

Swissair steps up battle for Alders
Swissair yesterday stepped up its campaign in its battle with BAA for the duty-free operations of Alders, the department store group. Page 22

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Chief price changes yesterday

FRANKFURT (DM)					
Daimler	532.5	+ 8.5	Bombardier	1320	+ 59
Nestle	548.8	+ 8.8	Novo	600	+ 15
Unilever	996	+ 23	Pfizer	722	+ 12
Deutsche Bank	243	+ 4	Prepag	495	+ 20
SABIC	370	+ 10	Telecom	468	+ 7
Novartis	825.5	+ 11.5			
NEW YORK (\$)					
IBM	42	+ 3	Ryanair	88	+ 100
Amgen	204	+ 9	Kelco	358	+ 38
Boeing	544	+ 24	Merck	606	+ 46
Merck	544	+ 24	Sony	644	+ 11
Pfizer	722	+ 12	Toshiba	821	+ 14
Novartis	825.5	+ 11.5			
LONDON (Pence)					
Shell	1185	+ 10	Unilever	2.40	+ 0.30
BP	58	+ 12	Novartis	21.50	+ 2.00
British Airways	65	+ 15	San Hong Kai	3.025	+ 0.475
British Telecom	284	+ 58			
British Petroleum	704	+ 10			
British Airways	123	+ 21			
PARIS (FFr)					
Air France	510	+ 2.50			
Elf	32.80	+ 1.75			
Elf Aquitaine	35.00	+ 2.25			
Elf Indus	4.20	+ 1.50			
Elf Energy	21.95	+ 1.20			
Elf Chemical	8.90	+ 0.80			
TOKYO (Yen)					
Yamaha	578	+ 13			

Cadbury sells UK soft drink plants

By Roderick Oram, Consumer Industries Editor
Cadbury Schweppes sold its British soft drink plants yesterday for about £700m (\$1.1bn) in a deal designed to give it more financial and management resources to develop its confectionery and soft drink interests into global businesses.
The buyer of Cadbury's 51 per cent stake in Coca-Cola & Schweppes Beverages, its UK production joint venture with Coca-Cola of the US, is Coca-Cola Enterprises, the US bottler 44 per cent owned by Coca-Cola.
Enterprises is also buying Coca-Cola's 49 per cent stake in OCSB for a similar sum as part of its multi-billion buying spree of bottlers across Europe in recent weeks.
"We're entirely indifferent about being bottlers," said Mr Dominic Cadbury, chairman of Cadbury Schweppes. The group believes greater profits lie in being a brand franchiser selling concentrates to bottlers rather than in bottling itself.
Cadbury Schweppes shares closed up 17p at 498p as the City

welcomed the initial £620m cash from the deal which will cut the group's gearing from 100 per cent to 44 per cent, give it money to seek acquisitions in confectionery and resolve some tensions between Coca-Cola and Cadbury in the US and UK.
"Cadbury Schweppes relations with Coke have got worse not better over recent years," said Mr Michael Landymore, an analyst with Henderson Crosthwaite. "I can't find too much to fault in the deal."
The two companies pooled their resources in OCSB in 1986 to accelerate growth of their brands' market shares and profits. Each company markets its own brands but franchises them to OCSB which produces, distributes and sells the drinks.
Both companies have benefited from their arrangement but analysts said their priorities were beginning to diverge as their products increasingly competed with each other.
"We didn't believe Coca-Cola would renew OCSB's Coke franchise when it expired in 2006," said Mr David Wallings, Cadbury Schweppes' chief executive.

CSFB will continue to bottle Cadbury Schweppes brands such as Canada Dry and Schweppes tonic which together have 6.5 per cent of the UK soft drinks market. Coca-Cola's brands have 32.6 per cent, of which Coke itself is 18.6 per cent, according to Beverage Digest, the US trade publication.
Cadbury Schweppes said it has safeguarded its brands through an initial 15-year licensing agreement with Enterprises with a possible 10-year extension.
Lex, Page 16; Marketing strategy in a bottle, Page 21

CSFB sued for £26m over advice to brewers

By John Mason and Nicholas Denton
CS First Boston, the investment bank owned by CS Holding, is being sued by a client for its work on a deal which was one of the first public takeovers upon which CSFB advised in the UK.
CSFB acted negligently in advising Eichhoff, the Swiss brewer, on its 1990 takeover of a UK colour imaging company that turned out to be "probably" worthless, the High Court was told yesterday.
Eichhoff, a Lucerne-based family company, is suing CSFB for about £26m (\$40m) in damages, claiming it failed to give proper advice about taking over International Colour Management (ICM).
Mr Anthony Boswood QC, for Eichhoff, said: "CSFB had no conception at all of what is expected of a London merchant bank in the circumstances of an engagement such as this."
The dispute centres on Eichhoff's £14m takeover in June 1990 of ICM, a company in Newbury, Berkshire, that made specialised colour imaging equipment.
By early 1990, ICM had run into desperate financial trouble, Mr Boswood said. Its debtors and overdraft had both risen substantially and the company resorted to "possibly questionable window-dressing" in its accounts.
ICM's financial situation continued to deteriorate quickly and it needed cash to survive. A new buyer was sought. Eichhoff, a long-standing client of Credit Suisse, the commercial banking arm of CS Holding, decided to buy ICM and employed CSFB as its sole adviser.
The business suffered during the recession. After two years, Eichhoff launched the case now before the High Court. Although CSFB charged a £250,000 fee, it "failed altogether" to perform some of its duties such as carrying out proper due diligence, Mr Boswood said, adding that, had Eichhoff been given proper advice, it would never have bought ICM which "was not worth £14m and was probably not worth anything".
CSFB disputes the fact that it was engaged to carry out a formal valuation of ICM and denies negligence. "We think we gave them completely professional and proper advice. They went into the acquisition with open eyes," said Mr Francois von Hurter, co-head of European corporate finance at CSFB.
The case is expected to last about four weeks.

Bouygues in talks to form telecoms alliance in France

By David Owen in Paris, Andrew Hill in Milan and Alan Carne in London
Bouygues, the French construction group, is in talks with Cable and Wireless of the UK and Veba of Germany to prepare to launch a telecoms venture in France.
Bouygues confirmed yesterday that it was in discussions with Stet, Italy's state-controlled telecommunications holding company, and also indicated that Veba and C&W, two of its partners in another company, Bouygues Telecom, were also involved.
Bouygues, which last week became the third entrant in France's fast-growing mobile phone market, said the talks covered both mobile and fixed telecoms markets.
The negotiations are understood to focus on expansion in the French market. One telecoms executive close to the negotiations said yesterday: "We expect efforts to attract customers for this venture will begin within the next few weeks."
Yesterday's disclosure comes about two weeks after it emerged that Stet was in talks on a wider alliance with Veba and C&W. Stet confirmed yesterday it was also in contact with Bouygues.
A joint venture in France would give Stet an opportunity to hit back at France Telecom, the French state company, which is teaming up in Italy with Infotrade, the telecoms joint venture between Olivetti, the Italian computer group, and Bell Atlantic, the US telecoms company.
Mr Martin Bouygues, Bouygues chairman, said yesterday that the first few days of the company's mobile telecommunications oper-

Vodafone rises 28% to £475m



Vodafone, the mobile phone operator led by Sir Gerald Whent (above), exceeded expectations with a 28 per cent rise in annual pre-tax profits to £475.1m. Story, Page 22; Lex, Page 16

First Austrian proposes to join forces with Creditanstalt

By Eric Frey in Vienna
First Austrian Savings Bank has proposed combining forces with Creditanstalt-Bankverein to create Austria's largest financial group with assets of Sch911bn (\$85bn).
Its plan to bring the two banks under a common holding company would also resolve the Austrian government's struggle to complete the privatisation of Creditanstalt.
Under the plan, a new holding company would be established by the foundation behind First Austrian and other members of a consortium formed two years ago to bid for the government's 70 per cent voting stake in Creditanstalt.
The holding company would then acquire 75 per cent of the

shares of First Austrian from the foundation and would buy a majority interest in Creditanstalt.
EA-Generali, the Austrian subsidiary of the Italian insurance group which leads the consortium, yesterday signalled its approval of First Austrian's proposal.
Mr Dietrich Kerner, chief executive of EA-Generali, urged Mr Viktor Klima, the Austrian finance minister, to arrive at a decision within the next three weeks.
Mr Klima, who is counting on the receipts from the sale of Creditanstalt to help keep Austria on course to meet the convergence criteria for a single European currency, made no comment yesterday.
Mr Konrad Fuchs, chief execu-

Barry Riley

A future savings boom looms for ageing Europe

An obvious feature of the global economy in the 1990s has been the consistent deterioration of public finances, with the ratio of debt to GDP in the OECD member countries rising from about 58 per cent in 1990 to a likely 74 per cent by 1996.
Is this trend dangerous? It depends on how easily fiscal deficits can be financed. According to a new study on *Savings and Wealth Accumulation in Europe*, jointly published in London by Merrill Lynch and Coopers & Lybrand, a surge in private sector savings during the next 10 years will provide a big offsetting demand for public sector debt.
It is easy to project Doomsday outcomes for demographic trends. But the problem is understanding where the real pressure points will apply in practice. A key problem, for instance, is the progressive decline throughout Europe in the so-called "support ratio", which is the number of people of working age for every old-age pensioner. Typically, this will drop from about four in 1990 to two by about 2025.
Yet at present, actual (rather than statutory) retirement ages are falling, while unemployment among people of working age (especially the young) is rising. This is an apparently perverse response to the perceived problem.
A financial manifestation of these trends is that the present value of the net unfunded pension liabilities of several European governments runs to

upwards of 200 per cent of GDP, notably for France and Italy. Forget irrelevant arguments about the 60 per cent Maastricht debt ceiling. Much more debt lurks off the balance sheet than on it.
But as the paper by David Miles and Bliff Fital explains, the same demographic pressures that are creating such deficits will also generate extra private sector saving. This is because practically all the saving is done by people aged 30 to 62, and especially from 50 onwards.
Although, in Europe, the pro-

portion of people aged over 62 is rising, and will continue to do so until at least 2040, for the time being, the 50-62 age group is expanding too. The authors' simple life-cycle model indicates that the European household savings ratio will climb for 10 years.
A second, more sophisticated, model takes other factors into account, such as interest rates, inflation and the flow of government debt. This so-called dynamic model predicts a similar upward trend in the private savings ratio but postpones the peak until about 2020.
Either way, the important implication is that \$150bn to \$200bn a year of extra personal savings will be generated

Some \$150bn to \$200bn a year of extra personal savings will be generated

tally, from the pattern in Japan where the population structure is less favourable and the savings ratio will be trending sharply lower throughout the period between now and 2020. So Japan's days as the savings centre of the globe are numbered.
Even in Europe the problem will not be so neatly solved, because the savings will pile up, especially in the UK, Spain and Italy but not so much in Germany or France. Substantial cross-border capital flows will therefore be required to avoid fiscal and social security crises in some countries.
Moreover, it is fundamentally unsound to finance current pension outgoings through heavy debt issuance. This is to attempt to fob off the burden on to the next generation of taxpayers.
There is a better argument for pre-funding, and so building up balanced pension funds that can invest in domestic equities and overseas assets as well as government bonds. Providers of long-term savings products should enjoy a prolonged boom - though not in Scandinavia, where forces driving up private-sector savings are less powerful.
The authors' optimistic conclusion is that there will be much greater intermediation through financial markets and institutions at the expense of pay-as-you-go recycling systems, and there will be an expansion of the stunted stock markets in Germany, France and Italy.
This may well be what the business planners at Merrill Lynch and Coopers & Lybrand want to hear. But another conclusion could be that Europe's public sector borrowing binge has only just begun.

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COMPANIES AND FINANCE: EUROPE

Viag poised to bid DM1.4bn for Sandoz arm

By Jenny Leesby in London

Viag, the German industrial conglomerate, is set to bid to DM1.4bn (\$917m) for Master Builders Technology, a subsidiary of Sandoz, the Swiss chemicals company.

Fresh setback for KLM-Northwest pact

By David Brown in Amsterdam

KLM Royal Dutch Airlines' problematic partnership with the US carrier Northwest Airlines received a further setback yesterday, as KLM announced it had suspended plans for the integration of the two airlines' global cargo operations.

KLM found another partner. Northwest could do likewise. He said he had been approached by Air France and Alitalia about possible co-operation.

Philips says jobs report is 'purely speculative'
By Alice Rawsthorn
Philips, the Dutch consumer electronics company, yesterday said it had formulated plans to shed several thousand jobs in its consumer electronics division over the next few years.

Deutsche Telekom warns after 47% rise for year

By Michael Lindemann in Bonn

Deutsche Telekom, the German telecoms operator to be partly privatised in November as part of one of the world's biggest share issues, yesterday reported a 47 per cent increase in net profits from DM3.6bn in 1994 to DM5.3bn (\$3.47bn) last year.

PROFILE Deutsche Telekom
Annual change 1994-95 Increase
Revenue from: Domestic telephony 5.9%, Mobile communications 12.6%
Number of: Telekom Online customers 49%, Cable connections 8%
REVENUE INCOME GROUP NET PROFITS
Veba is developing separate digital TV technology with Germany's KirchGruppe, the media group run by Mr Leo Kirch, and Metro, Europe's largest retail group, based in Switzerland. See Page 16

ING Barings Latin American team joins Deutsche Morgan Grenfell

By Antonia Sharpe and Nicholas Denton

ING Barings yesterday lost much of its highly-respected Latin American equity sales, research and trading team to Deutsche Morgan Grenfell, the acquisitive investment banking arm of Deutsche Bank.

However, ING Barings' Latin American operations, suffering from the dearth of primary equity issues, are believed to have lost money in the past year. ING Barings executives said the bank would rebuild its operations in the region more cheaply.

There has been discontent with ING management among the Latin American equity team for several months. DMG claimed it did not have to offer the lucrative packages associated with its hirings over the past year because it had been approached by the team.

The defection of the Latin American team has raised speculation that ING Barings' south-east Asian equities team will also be plundered. Two traders have recently left, but ING Barings said a mass defection in the region, one of the most profitable for the securities operations, was not expected.

ING Barings staff in Argentina and Peru are expected to join DMG later this week while its Colombia team is believed to have defected to Santander, the Spanish bank.

Philips said it plans to improve the profitability of the division in the late 1990s, with the aim of producing profits of £1bn by 2000. However, it faces a tough task, given the emergence of rival manufacturers in lower-cost south-east Asian economies and growing competition from the computer industry in some areas of the home entertainment market.

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Toolex Alpha N.V.
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4,416,000 Ordinary Shares
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CS First Boston
UBS Limited
Banque Nationale de Paris
HSBC Investment Banking
6,624,000 Ordinary Shares
Goldman, Sachs & Co.
CS First Boston
Alex. Brown & Sons
Montgomery Securities
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TENDER NOTICE
UK GOVERNMENT ECU TREASURY BILLS
For tender on 11 June 1996
1. The Bank of England announces the issue by Her Majesty's Treasury of ECU 1,000 million nominal of UK Government ECU Treasury Bills, for tender on a bid-yield basis on Tuesday, 11 June 1996. An additional ECU 50 million nominal of Bills will be allotted directly to the Bank of England for the account of the Exchange Equalisation Account.
2. The ECU 1,000 million of Bills to be issued by tender will be dated 13 June 1996 and will be in the following maturities:
ECU 200 million for maturity on 11 July 1996
ECU 500 million for maturity on 12 September 1996
ECU 300 million for maturity on 12 December 1996
3. All tenders must be made on the printed application forms available on request from the Bank of England. Completed application forms must be lodged, by hand, at the Bank of England, Customer Settlement Services, Threadneedle Street, London, not later than 10.30 a.m., London time, on Tuesday, 11 June 1996. Payment for Bills allotted will be due on Thursday, 13 June 1996.
4. Each tender at each yield for each maturity must be made on a separate application form for a minimum of ECU 500,000 nominal. Tenders above this minimum must be in multiples of ECU 100,000 nominal.
5. Tenders must be made on a yield basis (calculated on the basis of the actual number of days to maturity and a year of 360 days) rounded to two decimal places. Each application form must state the maturity date of the Bills for which application is made, the yield bid and the amount tendered for.
6. Notification will be despatched on the day of the tender to applicants whose tenders have been accepted in whole or in part. For applicants who have requested credit of Bills in global form to their account with ESC, Euroclear or CEDEL, Bills will be credited in the relevant systems against payment. For applicants who have requested definitive Bills, Bills will be available for collection at Customer Settlement Services, Bank of England, 150 p.m. on Thursday, 13 June 1996 provided cleared funds have been credited to the Bank of England's ECU Treasury Bills Account No. 50005116 with Lloyds Bank Plc, Bank Relations, St George's House, PO Box 787, 6-8 Eastcheap, London EC3M 1LL. Definitive Bills will be available in amounts of ECU 10,000, ECU 50,000, ECU 100,000, ECU 500,000, ECU 1,000,000, ECU 5,000,000 and ECU 10,000,000 nominal.
7. Her Majesty's Treasury reserves the right to reject any or part of any tender.
8. The arrangements for the tender are set out in more detail in the Information Memorandum on the UK Government ECU Treasury Bill programme issued by the Bank of England on behalf of Her Majesty's Treasury on 28 March 1995, and in supplements to the Information Memorandum. All tenders will be subject to the provisions of the Information Memorandum (as supplemented) and to the provisions of this notice.
9. The ECU 50 million of Bills to be allotted directly to the Bank of England for the account of the Exchange Equalisation Account will be for maturity on 12 December 1996. These Bills may be made available through sale and repurchase transactions to the market makers listed in the Information Memorandum (as supplemented) in order to facilitate settlement.
10. Copies of the Information Memorandum (and supplements to it) may be obtained at the Bank of England, UK Government ECU Treasury Bills are issued under the Treasury Bills Act 1877, the National Loans Act 1968 and the Treasury Bills Regulations 1968 as amended.
Bank of England
4 June 1996

S&A SOCIETE GENERALE ACCEPTANCE N.V.
FRF 500,000,000 REVERSE FLOATING RATE NOTES DUE JUNE 2003
ISIN CODE: XS0043249880
For the period June 03, 1996 to September 02, 1996 the new rate has been fixed at 11.05375 % p.a.
Next payment date: September 02, 1996
Coupon: FRF 10
Amount: FRF 2,804,25 for the denomination of FRF 100,000
FRF 28,042,53 for the denomination of FRF 1,000,000
The Principal Paying Agent: SOCIETE GENERALE BANK & TRUST - LUXEMBOURG

SOCIETE GENERALE
USD 500,000,000 UNDATED SUBORDINATED FLOATING RATE NOTES
ISIN CODE: FR0008202850
Pursuant to the Terms and Conditions of the Bonds, notice is hereby given to the Bondholders that USD 94,200,000 have been repurchased by the Issuer.
Nominal outstanding: USD 300,800,000
The Principal Paying Agent: SOCIETE GENERALE BANK & TRUST - LUXEMBOURG

COMPANIES AND FINANCE: EUROPE

NEWS DIGEST

OMV bolstered by Chemie Linz sale

OMV, the Austrian oil and gas group, yesterday reported a 7 per cent rise in first-quarter pre-tax profit as receipts from the sale of the Chemie Linz chemicals division made up for weak operating earnings. Pre-tax profit climbed from Sch950m to Sch1.02bn (\$36m) in the first three months while net profit edged up 1 per cent, from Sch850m to Sch900m, the company announced at its annual shareholder meeting.

But operating earnings fell 13 per cent, from Sch1.06bn to Sch940m, because of weakness in the plastics division, where operating profits tumbled from Sch240m to Sch200m. Another trouble spot was the refinery business, where earnings fell from Sch480m to Sch260m on lower prices for petrochemicals.

Other divisions posted better results. In oil exploration and production, a higher crude oil price helped OMV to swing from an operating loss of Sch30m to a profit of Sch90m. In the natural gas business, operating earnings climbed from Sch430m to Sch460m, and earnings from chemicals rose from Sch120m to Sch190m. Group sales dropped 7 per cent, from Sch191m to Sch17.5bn, reflecting the sale of Chemie Linz.

Eric Frey, Vienna

Losses widen at Alcatel Sel

Alcatel Sel, the German unit of France's Alcatel Alsthom, the French transport, telecoms and engineering group, suffered a 1995 operating loss of about DM300m (\$197m), widening from a DM150m operating loss the year before. The company said its loss from ordinary business was about DM350m, narrowing from DM490m in 1994. Sales shrank 16 per cent to DM5.4bn.

The parent company injected DM1.3bn in fresh capital, of which DM920m was used to cover the operating loss and expenses related to the correction of its share. The remaining DM320m was used to increase capital.

Reuters, Stuttgart

ING strengthens Polish stake

ING, the Dutch financial services group, has raised its stake in Poland's Bank Slaski by 7.25 percentage points to 33.15 per cent. The bank added that it had been given the option to acquire a majority stake through the purchase of a further 20 per cent. Both the increase of its shareholding and the future option were agreed with the Polish Finance Ministry, ING said. The option, exercisable next month, is subject to final approval by Polish authorities.

The Dutch company acquired its initial 25.9 per cent stake in Bank Slaski in 1994 as part of a strategic thrust into eastern and central European markets. Bank Slaski, one of the most profitable commercial banks in Poland, had more than 1m account holders and total assets equivalent to Fl 4.2bn (\$2.46bn) at the end of 1995, and earned Fl 157m last year, ING said.

David Brown, Amsterdam

Fokker to complete 15 aircraft

Fokker, the Dutch aerospace group, said the Amsterdam district court had granted its receivers permission to allow the completion of 15 aircraft. Production of the six Fokker 50s and nine Fokker 70s will keep the bankrupt company's production lines open at least until April of next year, providing work for about 40 people.

"After it was decided to complete production of two Fokker 50s and two Fokker 70s, binding agreements have been made with clients, partners and suppliers for the conditions under which another seven Fokker 70s and four Fokker 50s will be built and delivered," Fokker said. Fokker said the decision to fill the orders was based on the idea that "delivery of these aircraft to clients would yield a financial result that will benefit Fokker's creditors".

AFX News, Amsterdam

Finland in talks on Kemira arm

Kemira, the Finnish chemicals group, said yesterday it would start talks with the ministry of trade and industry about selling its Vihavouri gunpowder subsidiary to the Finnish state. "If the negotiators agree, 50.1 per cent of the shares (in Vihavouri) will be transferred at the beginning of 1997. The remainder would be acquired by the state not later than January 2000, but could be transferred in spring 1997," Kemira said. The Finnish state had "defence-related interests" in Vihavouri, which manufactures powder and ammunition and quarrying supplies. Annual net sales are about Fm150m (\$32m).

AFX News, Helsinki

Generali arm to sell Spanish unit

Assicurazioni Generali, the Italian insurance group, said its Spanish subsidiary had agreed to sell the Barcelona-based Caja de Revisión y Socorro to Spain's Aegon Union Asseguradora.

Generali said its Spanish company, La Societa Holding de Entidad de Seguros, based in Madrid, had agreed to sell the Barcelona-based group which in 1995 had premium income of more than Pta10bn (\$77.9m). Generali gave no financial details of the deal, but said it was part of a reorganisation of its interests in Spain, a nation which it called "fundamental" to Generali's strategy. Generali recorded premium income of Pta237bn in 1995 from its Spanish interests.

Reuters, Rome

Bilfinger & Berger Bau forecast

Bilfinger's Berger Bau, the German construction group, said yesterday it expected satisfactory earnings this year and a slight increase in output. It also expected 1996 output to rise 4 per cent to DM8.9bn (\$5.85bn). In 1995, output rose from DM7.64bn a year earlier to DM8.57bn. Mr Christian Roth, chairman, said the company's production capacity would be fully used into the fourth quarter of 1996 because of high orders in hand.

But the company, one of Germany's top five construction groups, said in its annual report that the German building sector was expected to shrink more than 2 per cent this year. A 4 per cent rise in output in east Germany would be insufficient to offset an expected 5 per cent fall in west Germany, Bilfinger said. Only housing investment would rise in east Germany and for the first time since unification, public sector and commercial construction would decline 2 per cent each.

Reuters, Mannheim

Norway seeks to sell 19.8% of Den norske Bank

By Hugh Carnegie in Stockholm

Norway yesterday launched its biggest bank re-privatisation issue since the loan loss crisis of the early 1990s, announcing a public offering of 19.8 per cent of Den norske Bank, a stake worth Nkr2.6bn (\$387m) at current market prices.

The offering, to Norwegian and foreign investors, will reduce the state's holding in DnB, the country's largest financial services group, to 62 per cent and follows a similar reduction in the government's holding in Christiania Bank and the sale of all its shares in Fokus Bank and Union Bank of Norway.

The state, which was forced to pump Nkr25bn into the banking system when a spate of loan losses threatened the banks with collapse at the turn of the decade, is now seeking to claw back a significant proportion of the taxpayers' money.

The sale of the latest DnB stake should bring to more than Nkr8m the total raised in re-privatisation issues.

But the Labour government has sparked some controversy by remaining committed to retaining a majority stake in both DnB and Christiania, the two biggest groups, at least until next year.

It then intends to seek parliamentary approval to reduce

Norsk Hydro, the Norwegian conglomerate, will be investing more than \$350m in Asia over the next three to four years, according to Mr Thor Hakstad, executive vice-president, AP-DJ reports from New Delhi.

The investments included those in petrochemical projects planned in the Middle East, Malaysia and India, he said. The company was also planning a "small venture" in China in extensions for the automobile industry.

The projects in Asia are expected to cost a total of more than \$1bn, with Norsk Hydro's share about 25 per cent of the total cost. Mr Hakstad said the petrochemical project in the Middle East was likely to cost about \$600m. He declined to give details of the petrochemical project planned in India. "It is in an early stage. But here our exposure might be more than 25 per cent," he said.

The holdings to stakes of about one-third. But it does not at present want to go further, arguing that the state should remain the principal owner to

which holds the state's bank shareholdings, will take place from June 10 to June 21.

SBC Warburg is to be global co-ordinator and adviser for the overall offering. Co-lead managers for the international offering will be Morgan Stanley and Alfred Berg, with Fondsinans and DnB Fonds leading the Norwegian offering.

No pre-set division of the offering between domestic and overseas investors has been established by the Government Bank Investment Fund. But it said there would be an unprecedented marketing effort made in Norway to attract retail investors.

The price is to be set on June

24 after a global book-building process. DnB shares closed yesterday at Nkr20.40, up Nkr0.50.

Mr Jan Hopland, the investment fund's chief executive, said he believed the timing was good for the issue as the Norwegian economy was strong and DnB was returning solid results having long since overcome its loan loss problems.

In the first quarter, DnB reported a record net profit of Nkr776m, up from Nkr655m in the same period last year. However, the results were flattered by generous write-backs of sums previously set aside for loan losses and low tax charges. Neither trend is sustainable, and DnB warned it had to further reduce costs.

Cofinec launches \$80m global offering

By Virginia Marsh in Budapest

Cofinec, the rapidly growing central European packaging group founded in 1989 by Mr Carlo De Benedetti, the Italian industrialist, has launched a global offering to raise up to \$80m. The company also announced yesterday it was to list on the Luxembourg and Budapest stock exchanges. The latter listing will make it the first non-Hungarian company to join the Budapest market.

Most of the proceeds of the

offer will go to shareholders, which include Cerus, the French-registered holding company which groups Mr De Benedetti's non-Italian business interests. Cerus owns 45 per cent of Cofinec's existing share capital. The move is in line with plans by Mr De Benedetti, who is also chairman of Olivetti, the troubled office equipment group, to sell non-core assets and reduce debt.

The offering, which will include a capital increase, is for more than 60 per cent of

the company, it will include an international placement of Global Depositary Receipts, each representing one share, and a much smaller public offer in Hungary. The price range for the international offering is Ft200-Ft225, with Barings and Creditanstalt Securities the joint global co-ordinators.

The European Bank for Reconstruction and Development is expected to sell its small stake in the company. Cofinec also has a 50 per cent

stake in Krpaco, a large Czech packaging company, and last month opened a plant in Poland.

The listing will boost the BSE, which is short of good quality stocks. The BUX index of the BSE, which has only 41 stocks with total capitalisation of about \$3.5bn, closed up 23 points yesterday at 2,949.

Cofinec's consolidated turnover was FFr975m (\$180m) in 1995. Operating profit was FFr66m, while net income rose 20 per cent to FFr17m.

Paris appoints Béchat as head of Snecma

By David Buchan in Paris

Mr Jean-Paul Béchat was yesterday appointed by the French government to the board of Snecma to replace Mr Bernard Dufour, who was last week dismissed as head of the state-owned aeroengine company.

The 53-year-old Mr Béchat has been head of the SNPE explosives company since 1994, but before that spent most of

his career at Snecma. His priority is expected to be to patch up Snecma's relations with its long-term partner, General Electric of the US, which deteriorated under Mr Dufour.

The French government had become concerned that the rift with GE would undermine the prospects of the loss-making Snecma returning to profit and being privatised. It is now considered possible that GE may soon take a stake in Snecma.

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RSVP MAYFAIR LIMITED
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U.S. \$79,000,000
Guaranteed Extendible
Variable Rate Notes due 2006

NOTICE IS HEREBY GIVEN that in accordance with Section 5.03(a) of the indenture, dated 31st March, 1992, Series K of the U.S. \$79,000,000 Guaranteed Extendible Variable Rate Notes due 2006 of RSVP MAYFAIR LIMITED (the "Bonds") will be redeemed in full by RSVP MAYFAIR LIMITED on the interest Payment Date falling on 17th June, 1996 at the principal amount date together with the interest accrued to the date of redemption.

Principal Paying Agent Goldman Sachs (Cayman) Trust, Limited P.O. Box 896 Grand Cayman British West Indies	Paying Agent Kreditbank S.A. Luxembourg 43 Boulevard Royal Luxembourg
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Interest will cease to accrue on the Bonds from 17th June, 1996.

Goldman Sachs (Cayman) Trust, Limited
Principal Paying Agent

5th June, 1996

سكيتا من الاصل

COMPANIES AND FINANCE: ASIA-PACIFIC/INT'L

NZ clears way for Air New Zealand-Ansett deal

By Terry Hill in Wellington and Bruce Jacques in Sydney

New Zealand's Commerce Commission, the country's competition watchdog, yesterday cleared the way for the national carrier, Air New Zealand, to buy a 50 per cent stake in one of its main competitors, Ansett of Australia.

The eventual price, still being negotiated, is likely to be between NZ\$25m and NZ\$35m, reflecting Ansett's declining profitability.

Earlier this year the New Zealand Commerce Commission refused to approve the "TNT-Air New Zealand deal because of monopoly concerns over the future of Ansett New Zealand, Air New Zealand's main domestic competitor.

News Corporation then offered to buy Ansett New Zealand and operate it as a stand-alone company, a move also approved yesterday by the commerce commission.

Mr David Mortimer, TNT's managing director, said his company and the others hoped to conclude the deal by the end of this month.

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Ken Cowley: approval sought from Australian regulators

Mr Ken Cowley, Ansett's chairman and chief executive who is also chief of the Australian operations of News Corp, said: "Now that we have settled the New Zealand regulatory issues, we look forward to regular steps in Australia to enable us to conclude this major transaction."

TOTAL 1996 ANNUAL GENERAL MEETING

TOTAL SHAREHOLDERS MEET IN ANNUAL AND EXTRAORDINARY MEETINGS

TOTAL shareholders met on June 4, 1996 for their annual and extraordinary meetings under the chairmanship of Thierry Desmarest, Chairman and Chief Executive Officer. They approved all of the proposed resolutions, as well as the 1995 accounts and the payment of a dividend net of tax credit of 8.70 French francs a share, up 9% from 1994.

Lord Alexander of Weedon and Mr Bertrand Jacquillat were elected to the Board of Directors for three-year terms.

Shareholders also approved the change in the By-Laws following the reduction in the French State's interest in TOTAL to less than 1%.

Quotes from the Chairman

In his comments on TOTAL's performance in 1995, Mr Desmarest said that "I have set as a goal for our company the rapid improvement in return on equity, to 10 percent in an initial phase. We should reach this figure in 1998, if we conservatively assume a business environment that is similar to the 1994 and 1995 average. I am convinced that we will be able to raise ROE even higher over the medium term."

"Improved profitability will result both from growth in business and from productivity gains. While it is clear that fast growing businesses like Upstream and Chemicals will benefit from scale economies as volumes rise, slower-growing businesses will be asked to make special efforts to reduce fixed costs. For example, our dedication to further lowering the break-even point at our refineries is essential for the return of the Downstream sector to a better profitability. Even greater efforts must be made in mature markets in the United States and Europe. In the US, we have decided to reduce refining capacity by closing the Ark City refinery. In Europe, there is no way to avoid participating, in one way or the other, in an industry-wide

restructuring, especially in France."

In speaking about early 1996, Mr Desmarest also indicated that "the Upstream business has improved its performance, thanks to increasing production outside the Middle East by more than 20 percent, together with stronger oil prices and a slightly higher dollar compared to the 1995 average. Downstream has been affected by contrasting trends: the dollar-franc exchange rate improved slightly, refining margins remained poor (albeit slightly better than in 1995), and marketing in the United Kingdom suffered a difficult price war. The Chemicals business has benefited from substantial growth through acquisitions, but has suffered from flat demand in certain European markets. These factors were reflected in the Company's first-quarter sales, which increased by 14 percent."

Business growth coupled with "slightly better business conditions than in 1994 and 1995 and Company-wide efforts to improve productivity should lead to a substantial increase, of about one-third, in operating income over the first five months of 1996 in relation to the year-earlier period."

The 1995 Annual Report may be obtained upon request to TOTAL, Corporate Communications



http://www.webnet.fr/total
TOTAL, Tour TOTAL, 24 Cours Michelet 92069 Paris La Defense Cedex France

Lend Lease to raise A\$500m from sale of Westpac shares

By Bruce Jacques in Sydney

Lend Lease, the Australian financial services group, is set to raise about A\$500m (US\$401m) through the sale of a large part of its shareholding in Westpac, the Australian bank.

Lend Lease announced yesterday it would offer 100m to 120m Westpac shares - representing about 6 per cent of the bank's capital - to institutional investors through an issue of four-year warrants.

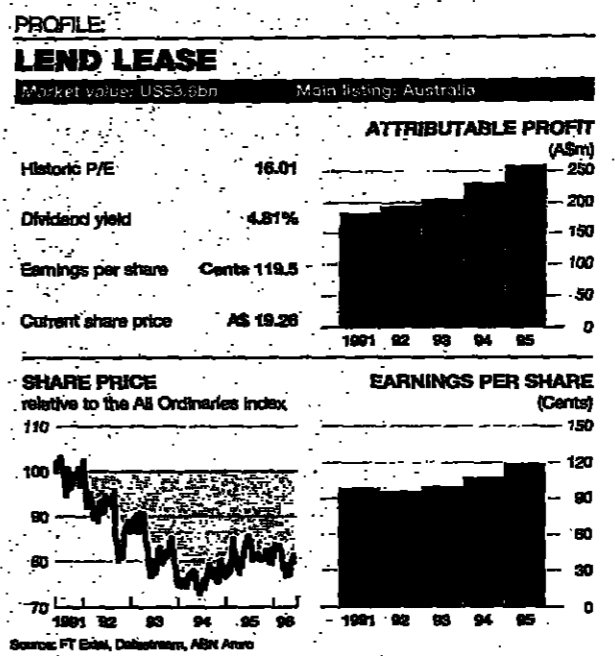
That would leave Lend Lease with about 3 per cent of Westpac's capital, which it has guaranteed will not be sold before April 1997. The Westpac sale offer opened yesterday and will close on Friday with a facility for investors to swap Westpac shares for warrants.

Westpac shares fell 27 cents to A\$4.72 on Australian stock exchanges yesterday, but Lend Lease still expects to book an abnormal profit of about A\$150m on the sale.

Lend Lease paid more than A\$800m to buy into Westpac in 1993 at A\$3 a share, taking advantage of a period of price weakness following a string of poor results from the bank.

The company has since strongly defended its investment, which drew criticism from ratings agencies, as a strategic lever for participation in Australia's continuing bank rationalisation.

But yesterday Mr David Higgins, Lend Lease's managing director, changed tack saying that while the company had been well rewarded for its Westpac investment, it was an opportune time to grow core



businesses which the company could directly influence.

"This transaction enables us to pursue the next generation of broadly-based financial services... rather than restrict our ambitions to traditional banking," he said.

"Until these new investments become fully income producing, we receive a reliable dividend stream from our continued participation in Westpac."

Yesterday's Lend Lease announcement also indicated that the timing of the divestment decision had been influenced by the inquiry into the Australian financial system set

up recently by the federal government.

The announcement said the expected abnormal profit from the deal would be largely offset in the company's June 30 annual results by provisions against overseas and technology investments. Lend Lease shares rose 13 cents to A\$19.26 on Australian stock exchanges yesterday.

The Australian government will today announce details of the sale of its 51 per cent shareholding in the Commonwealth Bank. With the bank's shares closing unchanged yesterday at A\$10, the sale is expected to raise about A\$4.5bn.

Tata Tea profits slide despite 30% rise in sales

By Kunal Bose in Calcutta

Tata Tea, India's fast expanding plantation group, suffered a drop in profits for the past financial year despite higher sales.

In the year to March 31, sales grew more than 30 per cent, from Rs3,38bn to Rs5,19bn (\$149m). But net profits fell 22 per cent, from Rs590m to Rs461m, after higher provisions for interest and tax.

Earnings per share fell sharply from Rs12.45 to Rs8.48. The dividend, however, is maintained at Rs1 a share.

The company said that "on a strictly comparable basis, profits from its main operations increased by nearly Rs140m."

But profits overall suffered a setback because "other income fell sharply, from Rs63.9m to Rs23.3m, because the figure in 1994-95 included about Rs10m from tax-free capital gains and an exceptional dividend from the company's investment subsidiary."

The group also recorded a sharp rise in expenditure, up nearly 30 per cent on a year earlier to Rs4,47b.

Tata Tea's revenue from exports advanced from Rs68bn last year to Rs1,05bn, up 51.5 per cent.

Analysts said that Tata Tea's credit, it has raised core business profits by 40 per cent even though tea prices remained depressed for the first quarter of the year.

Mr Ratan Tata, chairman, said: "Prospects for the current year appear to be bright. The company's production and prices of tea so far are ahead of last year."

Confident about the long-term prospects for tea, Tata acquired Boran and Konkar estates in Assam and Butaburi garden in West Bengal. The acquisitions should enable Tata Tea to produce more than 62m kg of tea a year.

It has also continued to expand its coffee business through takeover of CINVEN, the UK fund manager, is set to acquire the mobile radio business of Philips India, AFX-Asia reports from Bombay.

Philips Electronics, the parent company, said CINVEN and Philips India were holding talks on the details of the acquisition of the business, which is currently held by Philips Telecommunications (PTIL).

Philips India recently raised its stake in PTIL from 51 per cent to 100 per cent to facilitate the acquisition.

Metropolitan Life records 44% rise at halfway stage

By Mark Ashurst in Johannesburg

Metropolitan Life, the South African insurer controlled by New Africa Investments, the country's largest black-owned conglomerate, has posted a 44 per cent rise in attributable profit for the six months to March, from R37m to R54m (\$12.4m).

Strong gains in its predominantly black market boosted premium income by 33 per cent to R962.7m, against R716.4m. Earnings per share rose 42 per cent from 55 cents to 78 cents, and the dividend rose proportionally to 51.5 cents.

Analysts welcomed the results, but noted that MetLife's actuarial valuation, which is

annualised, had been amended to include 50 per cent of total earnings and dividends from the previous full year. The interim earnings and dividend, which are calculated on the basis of this valuation, had previously been annualised by including results for only the preceding six months.

"The growth is a bit misleading, but the results are still good. MetLife has lots of opportunity in the emerging (black) market, and we are confident of a strong performance in the second half," said Mr James Slabbert, analyst at Smith Borkum Hare in Johannesburg.

Income from investments rose by 32 per cent to R226.1m, compared with R246.4m, helped

by a sustained bull run on Johannesburg equities.

The market value of MetLife's investment assets - cited by several analysts as the best indicator of MetLife's likely performance in the second half - increased 32 per cent from R7.7bn to R9.5bn as total assets topped R10bn.

The newly established employee benefits division achieved 138 per cent growth in single premium income to R108.9m, against R47.6m, from a broad client base.

Securing premium incomes, the mainstay of MetLife's business, increased 25 per cent to R943.8m, against R668.6m last time, despite last year's relatively low inflation rate of 6-7 per cent.

Hambro Pacific in HK bank alliance

By Louise Lucas in Hong Kong

Hambro Pacific, the Hong Kong-based corporate finance advisory arm of Hambro, the London-listed merchant banking and financial services group, has taken a domestic commercial bank on board in an attempt to expand its business in the colony.

Under the deal, Dah Sing Financial Holdings, a Hong Kong-listed banking and financial services group, will take 50 per cent of Hambro Pacific, which will now be known as Hambro Dah Sing.

Hambros will continue to own the remaining 50 per cent. The price paid has not been disclosed, but directors say it is "not huge".

The alliance will give Hambro access to Dah Sing's extensive client base, while allowing Dah Sing to offer

its clients a greater product range.

The move is in line with predictions of a shake-out within the banking community in Asia.

Many in the industry believe that the survivors will be the large international groups, boasting the full range of services, together with a number of strong regional groups; those operating in niche areas, such as Hambro Pacific, will have to forge local alliances.

The newly-created company will look at opportunities in China when they arise, but Hong Kong is likely to continue as the predominant source of earnings.

To date, Hambro Pacific has been involved in areas such as mergers and acquisitions in the colony, acting for both the government and private corporations.

TOTAL NOTICE TO SHAREHOLDERS

PAYMENT OF DIVIDEND

The Annual General Meeting of Shareholders held on June 4, 1996 has set the 1995 dividend at FF8.70 per share.

A tax credit of FF4.35 will be added to this dividend.

Payment of the dividend, the amount of which will be dependent on the terms of the double tax convention between France and Great Britain, will be settled upon presentation of the coupon and completion of form RF 4 CB.

Residents may lodge this form with the Bank acting as their agent, either in France or in the United Kingdom, at any time up to December 31 of the second year following the collection date of the coupons. As a result of French legislation on the "dematerialisation" of securities, payment of the coupons will be

made through the banks with which the securities have been deposited.

The Annual General Meeting has decided to offer each shareholder the option to receive the 1995 dividend either in cash or in shares; the issue price of such shares - carrying dividend and voting rights effective from January 1, 1996 - has been set at FF 329 per share.

Shareholders opting to receive the dividend in the form of shares will be required to make such election between June 10, 1996, the dividend record date, and July 5, 1996.

Any shareholder who has not made such election by July 5, 1996, shall automatically receive the dividend in cash, payable as of July 24, 1996.



TOTAL SOCIETE ANONYME CAPITAL STOCK: FF1,814,726,050 R.G.S. NANTERRE B 542 081 180 HEAD OFFICE: TOUR TOTAL - 24 COURS MICHELET, PUTEAUX (HAUTS DE SEINE) FRANCE

44 National Financiers, S.N.C. US\$100,000,000 Collared floating rate notes due December 1998. The notes will bear interest of 6.25% per annum for the interest period 5 June 1996 to 5 December 1996. Interest payable on 5 December 1996 will amount to US\$158.85 per US\$5,000 note and US\$3,177.08 per US\$100,000 note. Agent: Morgan Guaranty Trust Company JPMorgan

CREDIT COMMERCIAL DE FRANCE FRF 100,000,000 REVERSE FLOATER BONDS DUE 1998 ISIN CODE: XS0041471063 For the period from June 3, 1996 to December 3, 1996 the new rate has been fixed at 10.89438 % P.A. Next payment date: December 3, 1996 Coupon of 5 Amount: FRF 534.72 for the denomination of FRF 10 000 FRF 5 347.76 for the denomination of FRF 100 000 THE PRINCIPAL PAYING AGENT SOCIETE GENERALE BANK & TRUST LUXEMBOURG

ALLIANCE LEICESTER Alliance & Leicester Building Society £200,000,000 Floating Rate Notes due 2000 For the interest period 31st May, 1996 to 30th August, 1996 the Notes will carry a Rate of Interest of 6.275 per cent. per annum with interest amounts of \$136.02 per \$10,000 principal and \$1,360.18 per \$100,000 principal, payable on 30th August, 1996. Listed on the Luxembourg Stock Exchange. Bankers Trust Company, London Agent Bank

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NESTLE S.A., CHAM and VEVEY Payment of dividend Notice is hereby given to shareholders that following a resolution of the General Meeting of shareholders held on May 30, 1996, the following dividend for the business year 1995 will be paid to them as from June 5, 1996: gross CHF 26.50 per share less Swiss federal withholding tax of 35%. All dividends will be paid by bank transfer to the shareholder's account or by cheque, in accordance with the instructions received from the shareholder. Cham and Vevey, May 30, 1996 The Board of Directors Switzerland

INDONESIA FUND LIMITED TO THE HOLDERS OF WARRANT DEBS Your attention is drawn to your right to subscribe for Ordinary shares of US\$10 each of INDONESIA FUND LIMITED ("the Company") and such rights may be exercised in the manner set out below from 5th June 1996 to 31st July 1996 to exercise your subscription rights. The following information may help you to decide whether or not to exercise your subscription rights this year. The middle market quotations from one of the independent market makers in the Company's Ordinary shares and Warrants were: Ordinary Shares of US\$10 each US\$ 2.50 2.625 2.875 2.875 2.875 2.875 2.875 Warrants of US\$10 each US\$ 2.50 2.625 2.875 2.875 2.875 2.875 2.875 Application will be made to the Council of the London Stock Exchange for the Ordinary shares allotted pursuant to the exercise of the subscription rights to be admitted to the Official List. Exercise of your subscription rights should not be treated as an offer to sell to you. Tax: A liability to Capital Gains Tax or Capital Transfer Tax may arise, however, if you subsequently dispose of, or nominate some other person to receive, the Ordinary shares arising from subscription. If you are in any doubt as to your tax position you should consult your professional adviser. If your subscription rights are not exercised on 31st July 1996 you will still have the right to exercise your subscription rights during the years 1997-2004 inclusive. This notice is given in accordance with the terms of the Warrant Deposit Agreement. It is not to be taken as a recommendation to holders of Warrants to exercise their subscription rights or otherwise. By Order of the Board: Morgan Guaranty Trust Company of New York, Avenue des Arts 33, 1040 Brussels, BELGIUM 4th June 1996 JP Morgan

European marketing strategy in a bottle

Coca-Cola is streamlining distribution as competition intensifies, writes Roderick Oram

W e're redrawing the Coca-Cola map of Europe," a senior executive enthused yesterday as the company unveiled a £1.2bn (\$1.9bn) deal in the UK, the latest in a series across the continent over the past few months.

Responding to rapidly changing market conditions in eastern and western Europe, Coca-Cola is pulling together an array of bottlers for the soft drink it is trying to make ubiquitous. It is retaining the role of brand manager, marketer and franchiser while it hives off production to "anchor bottlers", large multinational companies which it believes know more about production and distribution than it does.

The strategy is an attempt to replicate its success in the US over the past 10 years. During this time it has devolved most of its production to Coca-Cola Enterprises, a listed company in which it has a 44 per cent stake, and other big bottlers. As the US market stagnates, it is turning its attention to foreign markets where soft drink consumption remains far lower than in the US.

In eastern Europe, its main bottler has become Coca-Cola Amatil, the Australian-listed company which in the past few years has moved into 11 European countries.

In western Europe, Coca-Cola's first foray in this strategy was to sell its Dutch bottling company in 1993 to Coca-Cola Enterprises. The



Rolling along: bottler Coca-Cola Enterprises has spent \$3bn on recent acquisitions

sale price was \$366m but that included two US bottlers as well. Last month, it sold bottlers in France and Belgium to Enterprises for \$915m.

Yesterday, Enterprises paid £1.2bn for Coca-Cola & Schweppes Beverages, owned 49 per cent by Coca-Cola and 51 per cent by Cadbury Schweppes, the UK confectionery and soft drink maker. In total, Enterprises has spent about \$3bn on recent acquisitions, including one in the US, which will push its net debt to just over \$7bn, or about 62 per cent of total capital.

Enterprises argues its experience in bottling will enable it to grow these national businesses. The Dutch operations, for example, have increased

profits at an annual rate of 23 per cent since it took them over. In the UK, CCSB is a highly regarded operator, but it can improve by drawing on the expanding bottling network, Enterprises says.

This network will also help Coca-Cola better serve retailers, restaurant owners and other customers who are becoming increasingly multinational. "Coca-Cola Enterprises has very real skills to bring to that equation," says Mr Neville Islell, president of Coca-Cola's Greater Europe division.

Coca-Cola is not devolving all its bottling. It has just pulled together, for example, its east German bottling into a

new venture with two independent southern German bottlers.

Coca-Cola, Enterprises and Cadbury Schweppes all expressed satisfaction yesterday with their UK deal. Coca-Cola gains an anchor bottler which will be far more closely tied to it than was the joint venture with Cadbury Schweppes; Enterprises becomes the anchor bottler in the largest European carbonated soft drinks market; and Cadbury Schweppes resolves the growing dilemma it had with the joint venture.

Cadbury Schweppes yesterday played down growing tensions between it and Coca-Cola. Not only has the UK become a much bigger threat

to Coca-Cola in the US since the UK group's acquisition of Dr Pepper/Seven-Up last year, but their strategies were diverging in the UK. Coca-Cola wants to push Coke; Cadbury Schweppes wants to push its own range of soft drinks such as Schweppes tonic, Canada Dry, Oasis and Dr Pepper.

It was increasingly hard to resolve those tensions with a jointly-owned bottler. A cleaner solution has been for Cadbury Schweppes to cease bottling and franchising its brands to Enterprises.

But behind the deal lies an intriguing bet on the future of the UK soft drinks market. Although per-capita consumption in the UK is lower than the US, not all analysts believe the market will grow rapidly. Moreover, it will remain subjected to intense pricing pressures from retailers and minor brands.

Against this background, Cadbury Schweppes is wagering it can make more money selling soft drink concentrates to the bottler and marketing hard to grow its brand shares. Enterprise believes its skills and growing Europeanisation of soft drinks offer it a big opportunity. Coca-Cola has hedged its bet by becoming a franchiser with a captive bottler.

Conceivably, all three are right, as they were in the US. But there lurks the possibility that retail competition and consumer patterns in Europe are more challenging than those in the US.

Futures executives seek rule clarification

By Laurie Morse in Chicago

Futures industry executives will today ask Congress to clarify US laws governing foreign exchange trading in a hearing to be held in Washington.

The hearing, before the Senate agriculture committee, will re-open the issue of derivatives regulation in the US. Derivatives legislation, under the Commodity Exchange Act, was last overhauled in 1992.

US futures exchanges will make several proposals to the committee, including a request that exchanges be exempted from making costly investments in technology to track transactions.

More pressing is the uncertainty created by the Treasury amendment to the act which appears to exempt interbank foreign exchange trading from Commodity Futures Trading Commission oversight. The US Supreme Court last week agreed to consider a landmark case that could define the regulatory boundaries of the agency for cash currency trading.

Futures exchanges are seeking legislative clarification which would put them on equal regulatory footing with over-the-counter currency markets.

"If off-exchange, professional-institutional interbank markets in these instruments are to be exempt completely from regulation, the exchange market in the same instruments should enjoy the same exemptive treatment," Mr Patrick Arbor, chairman of the Chicago Board of Trade, will tell the committee today.

The US futures broking community will similarly seek clarification of the Treasury amendment. "The Futures Industry Association is concerned about the myriad legal issues that must be addressed when institutional clients enter into privately negotiated OTC transactions. Not only are these issues complex, but the consequences of an OTC transaction being re-characterised as a futures contract are potentially draconian," said Mr Laurence Molner, chairman of the FIA.

NEWS DIGEST

Moody's upgrades Greyhound Lines

Greyhound Lines, the struggling US bus company, yesterday received a nod of approval for its new management strategy when Moody's Investors Service, the US credit rating agency, upgraded its debt. But the shares, which have recently bounced back from earlier lows on recovery hopes, were off 8 1/2 at 34 1/2 in early trading.

Greyhound has been hit by a combination of low-fare competition from US airlines and an unsuccessful attempt to respond to that threat by cutting longer routes and setting up hub-and-spoke operations. Under Mr Craig Lentzsch, who took over as chief executive at the end of 1994, the company has restored long-haul routes, improved services and cut fares.

Moody's said it was upgrading Greyhound's senior notes to single-B3 from Caa, and its convertible debentures to Caa from Ca, citing improved operational and financial performance. It also assigned a single-B1 rating to Greyhound's new, \$80m credit facility, which is secured against the company's assets. "A new management team, in place for about a year and a half, has employed a back-to-basics strategy that has improved day-to-day operations and boosted ridership," Moody's said. It added that long-term profitability depended on the success of revenue initiatives now under way.

Richard Tomkins, New York

Black shakes up Southern board

Mr Conrad Black, the international publisher, is proposing to replace all five independent directors of Southern, the Canadian newspaper chain he now controls. The new directors proposed are Mr Derek Burney, a former Canadian ambassador in Washington and a senior executive at BCE, the telecommunications group; Ms Charles Dubin, retired Ontario chief justice; Montreal lawyer Mrs Donna Kaufman and Mr Yves Fortier - the latter a former Canadian ambassador at the UN; and Mr Stephen Jarislowsky, a Montreal pension fund manager.

They would replace five directors openly criticised by Mr Black for blocking Southern's return to adequate financial returns. The directors have said they were acting in all shareholders' interests - particularly the minority holders.

Last month, Mr Black's Hollinger holding company bought out Power Corp of Canada's 20.5 per cent stake in Southern, giving it 41 per cent control. It plans to raise this to 50 per cent through private share deals and then offer Hollinger stock for the remaining Southern shares. Robert Gibbens, Montreal

Western Canada oil expansion

Western Canada's oil sands and heavy oil industry is starting a C\$5.6bn (US\$4.1bn) five-year expansion plan spurred by favourable technical developments and a better tax regime. Over the next 25 years, the industry says, production of synthetic crude could triple from 400,000 b/d to 1.2m b/d, with investment of a further C\$25bn.

The industry is now concentrated in the Fort McMurray area of northern Alberta, where the two big tar sands producers, Syncrude Canada and Suncor, operate large mining and treatment operations. The resulting synthetic crude is pipelined to Edmonton for direct processing. Syncrude is investing C\$2bn over four years to bring output to well over 200,000 b/d. It is mainly owned by Alberta Energy, Imperial Oil, PanCanadian Petroleum, Petro-Canada, and Canadian Occidental. Suncor will invest C\$900m to upgrade and expand output.

Other investments totalling about C\$2.5bn will be made to develop reserves or raise output at other oil sands and heavy oil locations in southern and northern Alberta in the next four years. Robert Gibbens

LA Times halves cover price of main edition

By Christopher Parkes in Los Angeles

The Los Angeles Times, banner-carrier for the Times Mirror publishing group, has halved the cover price of its main edition to 25 cents in an aggressive move to reinforce its position in its core market.

Falling newspaper prices made the cut possible, officials said, and followed an increase from 35 cents in January in response to higher paper costs. However, the cover price will remain unchanged outside the broadsheet's main markets in

LA County, Orange County, Ventura County and the San Fernando Valley. It costs \$1 in Santa Barbara, 30 miles north of LA.

The move follows almost a year of restructuring under new chief executive, Mr Mark Willes, a former senior General Mills manager whose first actions included cutting almost 2,000 jobs in the group.

Although other papers and publications have been closed or shrunk, the LA Times has been given special attention. Foreign editorial coverage has been reduced and local affairs

have been drawn in sharper focus.

Most circulation and advertising sales efforts are now concentrated in Los Angeles and environs, where the paper faces especially fierce competition from the Orange County Register to the south and the Daily News, which serves the inland San Fernando Valley.

National papers, including USA Today and The New York Times, and dozens of free-sheets also contribute to the pressure.

Because of local conditions, the LA Times cover price has

been pinned at 25 cents in these bordering markets for several years. According to company data, circulation in Orange County has increased 20 per cent since 1988, while total sales have fallen almost 9 per cent over the same period.

Part of this decline - a fall in weekday sales of 37,000 was reported last year - is the result of withdrawal of home delivery services in areas "of no interest to our main advertisers", an official said.

Delivery has been stopped in San Francisco, central California and Arizona, for example.

Meanwhile, the group claims to have improved its service for Los Angeles' large Spanish-speaking community. Following the closure of the jostling Nuestra Tiempo, a free-sheet co-production between Times Mirror and LA Opinion, is now being distributed to 200,000 homes a week.

Mr Willes, who in January said he felt there was "some room to breathe", has set himself a target of a 50 per cent increase in earnings per share in his first year. Observer, Page 15

KfW's 1995 Report on Cooperation with more than 100 Developing Countries is now available.



KfW - the German Development Bank

On behalf of the Government of the Federal Republic of Germany, KfW finances investment projects and project-related consulting services in developing countries ("Financial Cooperation"). For this purpose, KfW has committed DM 3.5 billion from Federal Budget funds in loans and grants in 1995.

The 1995 Annual Report "Perspectives of Financial Cooperation" is now available. Numerous practical examples, ranging from the protection of the environment and natural resources in Niger, sewage disposal in Turkey, to family planning in Pakistan, are presented. They illustrate the manifold aspects of KfW's cooperation with more than 100 developing countries.

The primary objective of all efforts is to permanently improve the living standards of the people in Third World countries through development projects. Germany thereby renders an important contribution towards the safeguarding of global peace.

For further information on Financial Cooperation with developing countries, please contact us to obtain KfW's 1995 Annual Report "Perspectives of Financial Cooperation" or to receive additional information on our work in general. We look forward to hearing from you.

KfW Kreditanstalt für Wiederaufbau

Palmengartenstrasse 5-9 · D-60325 Frankfurt am Main
Phone (69) 74 31-27 03 · Fax (69) 74 31-37 46

ACCOLADES IN ASIA

ING BARINGS

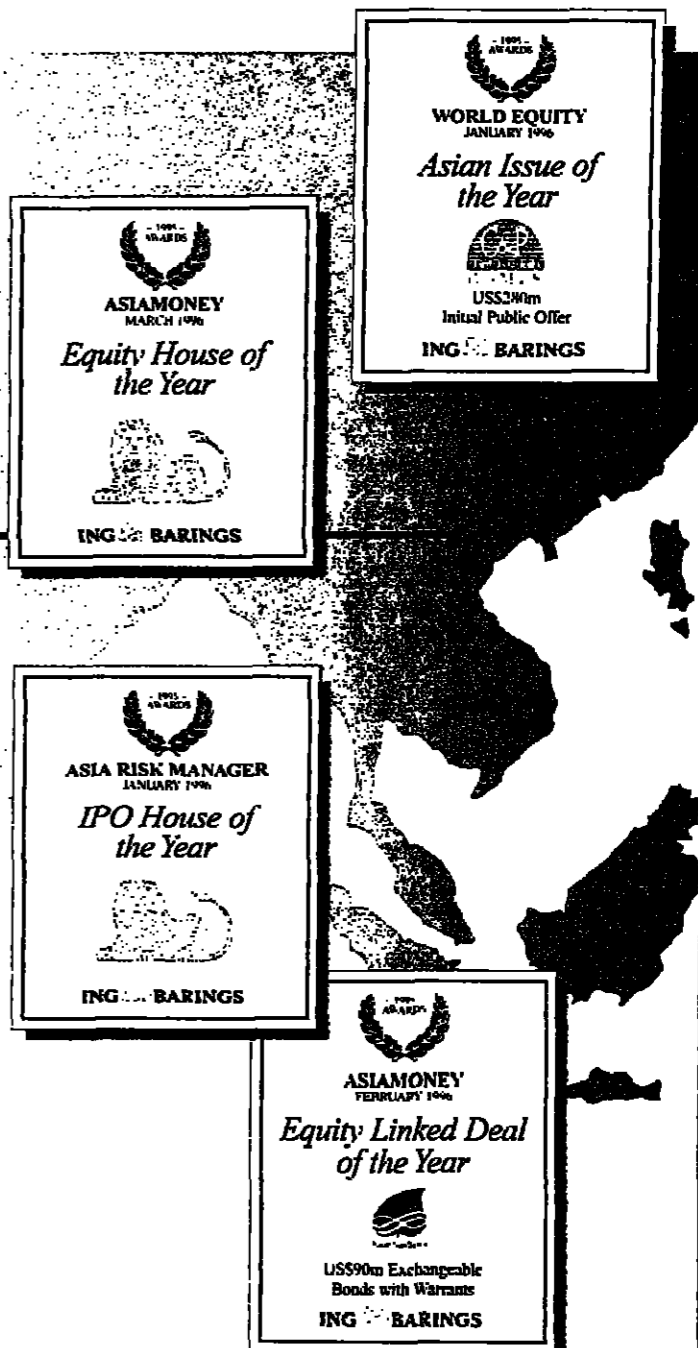
In January 1996 World Equity magazine voted ING Barings' public offer for C&P Homes the Asian Issue of the Year.

In the same month Asia Risk Manager voted us IPO House of the Year.

In February 1996 Asiamoney voted our Exchangeable Bonds with Warrants deal for Siam Sindhorn the Equity Linked Deal of the Year.

And, not surprisingly, in March 1996, it voted us Equity House of the Year 1995.

No other investment bank has ever won so many awards in one year for Asian Equity issues.



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PPL Therapeutics plc

(Incorporated and registered in England and Wales under the Companies Act 1985 with registered number 2745752)

Placing

HAMBROS BANK LIMITED

of 7,800,000 new ordinary shares of 50p each at 450p per share payable in full on application

Table with columns: Authorised, Issued and fully paid, Number, £

PPL is one of the world's leading companies in the transgenic production of human proteins for therapeutic and nutritional use.

Copies of the prospectus of PPL, dated 4 June 1996, which has been approved by the London Stock Exchange as required by the Listing Rules made under Section 142 of the Financial Services Act 1986...

Table with columns: PPL Therapeutics plc, Hambros Bank Limited, Address, Contact Info

5 June 1996

TriGem Computer Inc.

Notice of Bondholders' Additional Option to Redeem Bonds on 4th June, 1996 and Rights to Revoke Notices of Redemption

To the Holders of the Company's U.S. \$30,000,000 3 1/2 per cent. Convertible Bonds due 2005

NOTICE IS HEREBY GIVEN that following the execution by TriGem Computer Inc. (the "Company") and Bankers Trust Company (the "Trustee") of a Supplemental Trust Deed dated 2nd April, 1996...

THE REGENT MOGHUL FUND LIMITED (Incorporated in the Cayman Islands) Notice is hereby given that the directors of The Regent Moghul Fund Limited...

CREDIT LOCAL DE FRANCE FRF 500,000,000 REVERSE 23 MONTH BONDS DUE 1999

AKZO NOBEL Pursuant to the Dutch Major Holdings in Listed Companies Disclosure Act ("Wet Melding Zeggenschap")...

EUROPEAN COAL AND STEEL COMMUNITY FLOATING RATE NOTES DUE 1997

MARGINED CURRENCY DEALING CALL TOLL-FREE Laurion

PERSONAL PUBLIC SPEAKING Training and speech writing by award winning speaker.

COMPANIES AND FINANCE: UK

Swissair offers £145m for Alders arm

By Lisa Wood

Swissair yesterday tried to seize the initiative in its acrimonious battle with BAA for the duty free operations of Alders, the department store group.

asked the shareholders to respond by close of business tonight. Alders, which until now has said the BAA bid of £130m was the only firm offer it had received...

what appears to be a sensible offer which shareholders can properly consider," it said. BAA will decide on its next move this morning.

SBC Warburg, on behalf of Swissair, has said that subject to the support of Alders' shareholders it will make a cash offer on terms "which in all material respects will be the same as those applicable to the proposed sale to BAA".

in April and May. When the deal was announced Alders said the BAA bid was the only firm one that it had received and agreed to recommend it to an extraordinary meeting on June 10.

Receiver for Sock Shop

By William Lewis, Ross Tieman and Norma Cohen

Sock Shop yesterday became the final part of the Facia Group, previously the UK's second-largest privately owned retailing chain, to enter insolvency proceedings, as institutional shareholders criticised Sears' relationship with Facia.

last night that it was "unclear who owned" those shoe shops. KPMG says they are owned personally by Mr Stephen Hinchliffe, Facia's chairman.



Stephen Hinchliffe: seeks funds

Vodafone beats expectations

By Alan Cane

Vodafone, the world's fifth largest mobile phone operator, announced a 28 per cent rise in pre-tax profits to £475.1m (£722m) in the year to March 31, exceeding City expectations of £450-£470m and confirming its return to growth after a disappointing performance the year before.

£47.8m. In the rest of the world it reduced losses to £18.4m against £44m on turnover of £33.6m (£34.2m).

Natl Grid allays regulatory fears

By Simon Holberton

National Grid Group, the privatised operator and owner of the high voltage electricity grid in England and Wales, yesterday sought to allay investor fears about its impending regulatory review by claiming that comparisons with Transco, the British Gas pipeline subsidiary, had been overdone.

RESULTS table with columns: Company, Yr to Mar, Turnover (£m), Pre-tax profit (£m), EPS (p), Current payment (p), Date of payment, Dividends (p), Total for year, Total last year

LEX COMMENT Camelot

The chances of a player accumulating £51m from the UK's National Lottery are one in several trillion, but the after-tax profits of lottery organiser Camelot owe little to luck. It has done a great job in setting up the system and marketing it.

Instituto de Crédito Oficial USD 450,000,000 Statutorily Guaranteed Floating Rate Notes due 1997

To the Holders of Banco Central de Costa Rica US \$58,611,115 Series A Interest Claims Bonds Due May 21, 2005

Notice to the Holders of THE OUTSTANDING \$60,000,000 8.5% p.a. Convertible Bonds due December 31, 2009

Progress on Eurotunnel talks

By Geoff Dyer

Hopes of a prompt settlement to Eurotunnel's refinancing talks were raised yesterday by a statement from Mr Patrick Ponsolle, the Anglo-French group's co-chairman.

Both the banks and the company are expected to use the looming deadline to try and squeeze concessions out of the other side.

in any day since September. There was speculation in Paris that the refinancing terms would be less harsh for shareholders than had been feared.

PUBLIC NOTICES LOWNDIES QUEENSWAY PLC DIRECTORS' PENSION SCHEME

Advance Bank Australia Limited US\$150,000,000 Floating Rate Notes 2006

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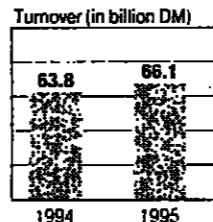


We've been
looking ahead from
the start.

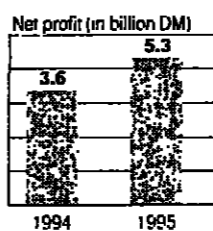
We have presented our first consolidated financial results. Since 1990, we have invested heavily in the network; created a new company structure as well as a focused marketing strategy.

Our financial results at a glance

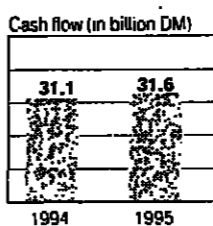
Increased turnover
Group turnover of Deutsche Telekom increased by 4% to DM 66.1 billion (US \$ 46.1 bn) compared to the previous year. Growth came mainly from telephone services and mobile telephony.



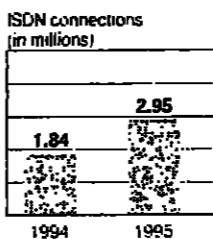
Net profit
The group's net profit increased last year by 50% from DM 3.6 billion to DM 5.3 billion (US \$ 2.5 bn to US \$ 3.7 bn).



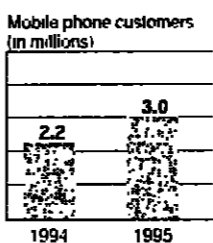
Strong cash flow
We increased our operative cash flow from DM 31.1 billion to DM 31.6 billion (US \$ 21.7 bn to US \$ 22.0 bn) compared to the previous year. All investments and the repayment of financial commitments were financed out of cash flow.



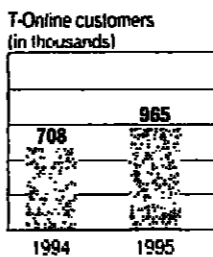
Telephone services
With 40 million connections, we have the third largest telephone network in the world. And one of the most modern. Thanks to the increasing digitalisation of our local network and, of course, ISDN where we have more connections than anyone else in the world. With a market orientated tariff structure and new improved services, we are laying the foundations from which to face domestic competition from 1996 onwards.



Mobile telephony
In mobile telephony, the number of our customers increased last year by around 40% to more than 3 million. It's because of new customer orientated services that we have one of the leading businesses in Europe.



T-Online
Around one million customers used our T-Online service last year. With approximately 20,000 new customers every month, we were able to make sure that T-Online significantly increased its lead as the biggest data service in Germany.
All figures: per exchange rate on 29-12-95.



Now, we are well placed to meet challenges as they arise. Despite increasing competition in the German telecommunications market, turnover and net profit have risen - results that point us in the right direction.

And not only in Germany. As we set our sights globally, we've celebrated some important business achievements. Global One, for example, our international joint venture with France Telecom and Sprint, is one such notable success. So, too, is our increasing expansion into Asia and Eastern Europe.

Innovation in the multimedia age.
Telecommunications is considered by many to be one of the most dynamic markets of the future, with an increasing number of businesses basing their success on technology. That's why we want to continue to build on our position as a leader in information super-highways, where our pioneering work has helped to transform the way we all live through the use of telemedicine, telelearning and teleworking.

Today, our multimedia services can offer everyone at home or in the office an exciting way into the fascinating world of information.

Why not discover the future for yourself? If you want more details on Deutsche Telekom's financial results, simply send us a fax on +49 9 21 18 10 29 for a copy of our annual report.

Our connections move the world.



COMMODITIES AND AGRICULTURE

Funding boost raises Cuban sugar hopes

By Pascal Fletcher in Havana

Cuba has secured foreign financing for its 1996-97 sugar harvest in all 13 of the island's sugar-growing provinces and this is expected to lift its sugar production next season well above the 4.5m tonnes estimated for this year.

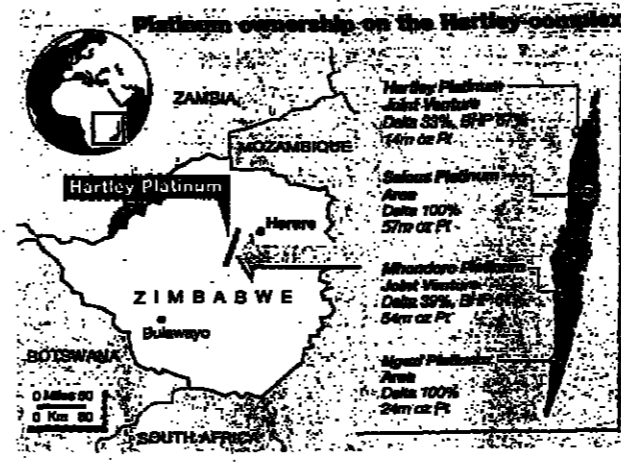
That cover had now been extended to all 13, Mr Betancourt said. The positive impact of the foreign capital injection into Cuba's recession-hit sugar sector was visible in this year's harvest, which Cuban leaders are confident will reach the official target of 4.5m tonnes, a significant jump up from last year's disastrously low 3.3m tonnes.

Cuba's sugar output over the next two or three harvests back to historical levels of at least 6m tonnes, and possibly higher, depending on economic and other factors.

Deal close on Zimbabwe platinum venture

By Kenneth Gooding, Mining Correspondent

A deal should be completed within six months to bring together the four platinum areas in Zimbabwe into a venture capable eventually of challenging the big South African platinum producers.



Mr Peter Vanderspeij, chairman of Delta Gold, an Australian company with an interest in all four areas on Zimbabwe's Great Dyke - a long, sinuous structure traversing the country - made this prediction yesterday.

He said putting only two of the projects together - Hartley and Mhondoro - would result within ten years in a complex capable of producing 750,000 troy ounces of platinum a year, equivalent to between 10 and 12 per cent of global output.

accounting for 70 per cent of world platinum supply, have an average production cost of about \$320 an ounce," he pointed out.

Mr Vanderspeij said negotiations between BHP and Delta for a merger of all four areas were very complex because discussions involved many other issues. Among these was whether Delta should repay BHP its 33 per cent share of the \$364m capital cost of Hartley. If Delta did not repay, it would receive only 8.9 per cent of project cash flow whereas, if it repaid its share plus interest, it would receive 33 per cent of the metals produced by Hartley. Financial modelling by Delta confirmed the desirability of repaying BHP, he added.

MARKET REPORT

Copper weak

COPPER prices were unable to hold above the \$2,400-a-tonne level in after hours 'kerf' trading on the London Metal Exchange yesterday and slid back to register a weak chart close, although the market remained above early lows of \$2,355 a tonne.

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Aluminum, Copper, Lead, Nickel, Zinc, Tin.

Financial controversy threatens plan to protect plant diversity

John Madeley reports on a UN Food and Agriculture strategy to halt 'large scale loss of plant genetic resources'

An international plan to help the conservation and sustainable use of plants has run into problems just weeks before it is to be discussed at a major UN Food and Agriculture Organisation conference in Leipzig (June 17-20).

The FAO says around three-quarters of the world's plant species have been lost this century, and warns that the "large scale loss of plant genetic resources, vital for agriculture and food security, give reason for major concern". The warning is based on a survey of 154 countries.

hunger and poverty". A further aim is "to promote a better sharing of the benefits derived". Farmers that have contributed plants that are used by breeders to develop improved crops, could, for example, be entitled to benefit.

The draft plan admits that most "attention, funds and scientific expertise" have so far focused on conservation of plant genetic resources in genebanks - refrigerated store rooms - and that the importance of on-farm conserva-

genetic resources - by increasing, for example, the genetic diversity that is available to breeders. A meeting of the FAO Commission on Genetic Resources for Food and Agriculture in late April was bogged down for three days on the matter of funds, with western countries saying that existing sources of funding should first be examined. Developing countries said they "deeply regretted" that the funding proposals were not accepted.

Two industry organisations, the International Association of Plant Breeders for the Protection of Plant Varieties, and the Green Industry Biotechnology Platform, issued a statement saying that the plan "provides a useful basis... to help conserve and sustainably use plant genetic resources for food and agriculture" and that government resources would be required.

The draft plan has also attracted criticism from over 20 non-governmental organisations from five continents. At a recent meeting in Rome, the NGOs took the view that while a Global Plan was surely needed, the draft gave too much priority to conservation in genebanks, and that that would "increase reliance on formal research institutions... further marginalising farmers' roles in the on-farm conservation and development of plant genetic resources".

COMMODITIES PRICES

BASE METALS

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Aluminum, Copper, Lead, Nickel, Zinc, Tin.

Precious Metals continued

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

GRAINS AND OIL SEEDS

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Wheat, Maize, Soybeans, Barley.

SOFTS

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Cocoa, Coffee, Sugar.

MEAT AND LIVESTOCK

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Live Cattle, Pork, Hogs.

ENERGY

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Crude Oil, Heating Oil, Gas.

PRECIOUS METALS

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

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PRECIOUS METALS

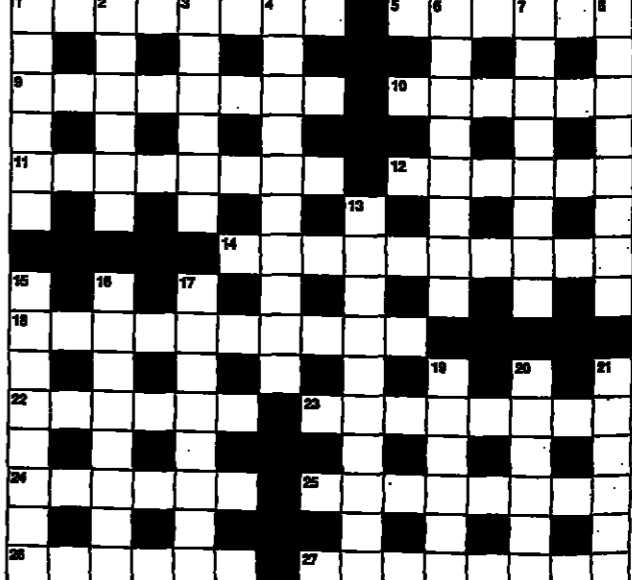
Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

JOTTER PAD

Table with columns: Commodity, Price, Change, High, Low, Vol. Includes Live Cattle, Pork, Hogs.

CROSSWORD

No.9,086 Set by BATS



- 1 Manage to avoid scuffing half of loaf (a messy idea) (8)
2 Breathe about Indian bread fruit (5)
3 Might one be upset by this hallucinogenic message? (4-1)
4 Just advocates cathedral (8)
5 Light, then plunder traveller's bag (6)
6 Bird with symptom of bronchitis put in hospital (5)
7 Measure of bias evident in election involving Mr Nasty (10)
8 Of good omen, but doubtful if leader's replaced (10)
9 Waves back we hear (6)
10 Six misspell (a nervous problem), a nervous problem (6)
11 Direction that is of the great-est latitude (8)
12 Drunk after strain becomes impenetrable (8)
13 Vocaferated, seeing back line was in front (5)
14 Indirectly relating to the whole (8)
15 Sign removed from flag - flag complex (8)
16 Student gripped by something easy with the grip (8)
17 You and I helpless about those most depressed (6)
18 Left to selectively kill, is on copper's tail (10)

Solution 9,085

PRECIOUS METALS

Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

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PRECIOUS METALS

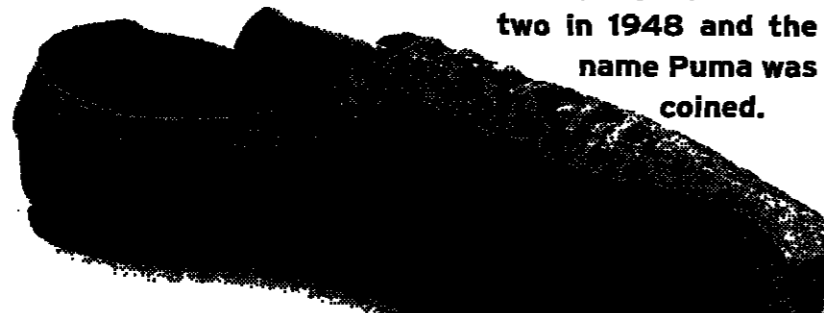
Table with columns: Metal, Price, Change, High, Low, Vol. Includes Gold, Silver, Platinum, Palladium.

WE'RE PERFORMING BRILLIANTLY ON GRASS AND TARTAN.

AND JUST AS WELL ON PAPER.

The company that was to become Puma was born back in 1924.

It was launched by Rudolf Dassler and his brother into a sports market in its infancy. Known then as Dassler Schuhfabrik, the company split into two in 1948 and the name Puma was coined.



For years, there was little competition and the brand thrived, enjoying decades of market leadership. Business peaked in 1986, coinciding with a stock-market flotation. Although new products and new technologies were consistently introduced, a rude awakening was in store in the shape of highly aggressive competition from Reebok and primarily Nike. Puma was quickly outpaced by its younger and fitter competitors. Seven years in the wilderness lead to unsustainable losses. It became obvious that a programme of refocusing and restructuring was not only necessary but vital to the future of the company. Thus, phase one of the restructuring programme was introduced in 1993. It involved drastic cost reduction. The streamlining of the product range. The creation of profit centres. And the outsourcing of production. As well as a painful, but absolutely crucial, headcount reduction.

Phase two began in 1994. Basically, this was an internal re-engineering process. The entire company culture was modernised. Business processes were redesigned. Product costing was closely examined. And a streamlining of suppliers was undertaken.

Phase three followed in 1995. At its core was a renewed focus on product. A focus that accurately reflects the company's mission statement:

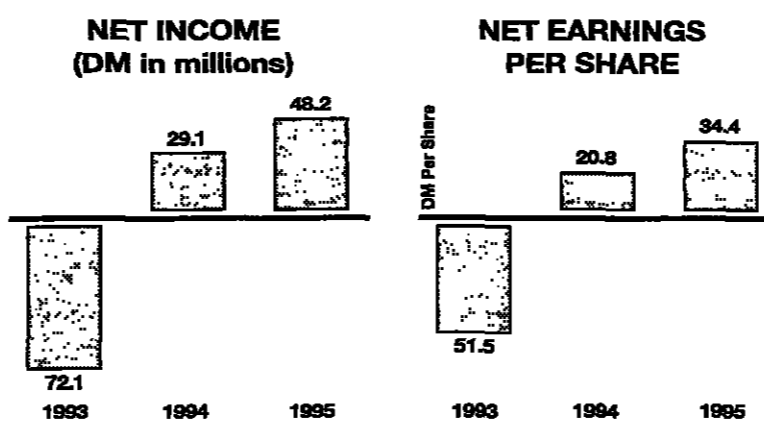
'to market excellent sports performance products that meet the needs and aspirations of today's consumers'

Allied to this was more stringent business management. A greater market and customer focus. A new product range. A global marketing strategy. Increased concentration on customer service. And tighter licensee control. These measures have lead to a welcome return to both growth and profit.

The impact of the restructuring has been widespread. Loss-making profit centres were reorganised or, in extreme cases, closed during phase one. In 1995, every one of the nine remaining profit centres did indeed make a profit.

Sales in the Puma Group and Worldwide (including licensees) have increased to DM413.6 million and DM1,128.9 million respectively. Margins, too, have improved markedly. Gross profits have risen from 29.9% of net sales to 37.4%. Income from operations has jumped from -11% to +14.5% of group net sales. While net income has leapt from -17.6% in 1993 to +11.7% in 1995. Not surprisingly, the impact on earnings per share has been

enormous with an increase of 65.4% over the period '94-'95 alone.

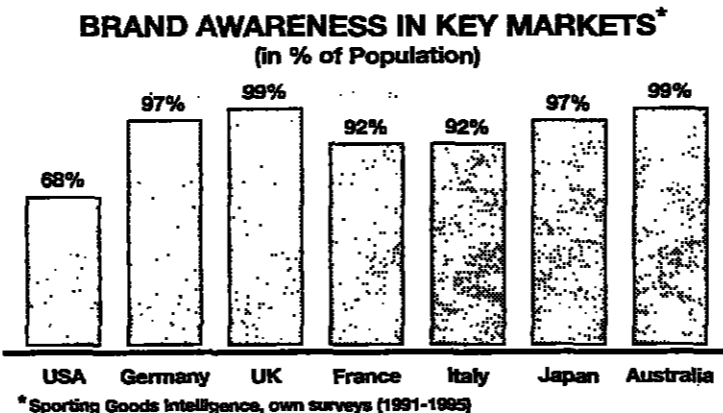


And so today the company finds itself, like its top endorsed stars, in good shape.

But what of the future? Well, the opportunity facing the company cannot be overstated.

The global sports market is simply vast. The sports footwear market alone now stands at approximately \$15bn per annum. Astonishingly, Puma's share of the worldwide market stands at just 4%.

The opportunity for growth for a sports company with the tradition and rich international heritage of Puma is there for all to see.



For, while market share in the US is minimal, brand awareness is surprisingly high. No less than 68% of the population profess recognition of the Puma brand. An impressive figure but noticeably less than the 90% brand recognition that Puma enjoys in many international markets. The widely contrasting figures attributed to market share and brand can only be seen as an opportunity for growth and must not be missed.

So just how can the company exploit this opportunity? What, in essence, are the tools for success?

Historically, Puma has been at the forefront of new technologies. Witness the introduction of the sole and shaft vulcanisation technology in the late '50s. The development of Velcro fastening in the '60s and the 'Trinomic' sports shoe mid-sole technology and Puma Disc system in the '80s and '90s.

Only by constantly pushing for technological leadership can Puma continually fulfil its mission statement. Hence the arrival of the latest technology. Puma Cell.

A lighter, more durable, performance based technology. Other leading manufacturers are also working on new technologies.

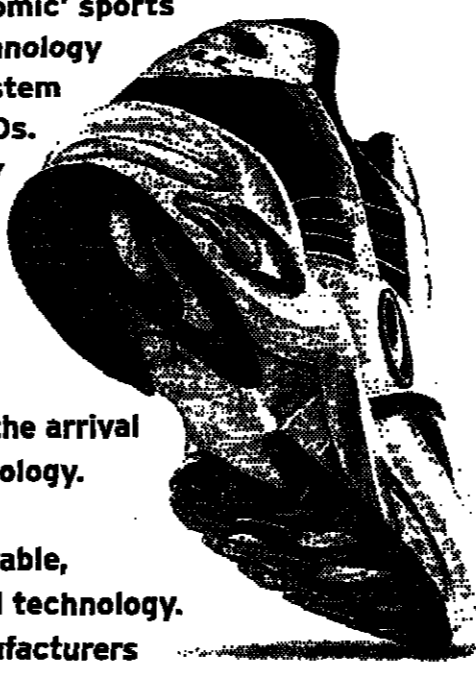
But, according to the Wall Street Journal,

no less, Puma have once again got there first.

*By JOSEPH PEREIRA
Staff Reporter of THE WALL STREET JOURNAL
Puma AG has begun shipping a foam-less athletic shoe, beating to market a host of bigger rivals with a technology on which the footwear industry plans its next generation of sneakers.*

Of course, on the pitch, our endorsed stars continue to shine. Diego Maradona and Lothar Matthaus have both lifted the World Cup. And they both wear Puma boots. On the track Jonathan Edwards, Linford Christie, Heike Drechsler, Merlene Ottey and Colin Jackson all wear Puma. Between them they have won 39 Olympic and World Championship medals. No fewer than nine of which were gold. And we all know that gold is good for the bank balance. Very good, indeed.

PUMA



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INTERNATIONAL CAPITAL MARKETS

Treasuries shrug off manufacturers' orders data

By Lisa Branten in New York and Sander Iskander in London

A stronger dollar and an easing of fears that the Federal Reserve might raise interest rates next month helped US Treasury prices rise modestly, despite stronger than expected figures on manufacturers orders.

several Fed officials suggesting they were not alarmed by the pace of economic growth. Bonds also benefited from the dollar jumping to a 28-month high against the yen and also rising against the D-Mark.

Most European bond markets were supported by the rallying US market. Italian BTPTs were once again the strongest performers. Life's September STP future settled at 115.66, up 0.71.

easing would favour short maturities in particular, said Ms Phyllis Reed at BZW, who sees "good value in the two-year area of the yield curve relative to five-year maturities".

German bonds ended higher, tracking the US market. Life's September bond future settled at 95.71, up 0.22 and the 10-year benchmark bond closed at 98.37, up 0.32.

UK gilts were supported by a firm currency and rallying Treasuries. Life's September gilt future settled at 105.14, up 0.16.

Signs of pricing swinging back in favour of banks

By Antonia Sharpe

The bottom of the pricing cycle in the syndicated loans market has been predicted many times in the past 12 months, but that moment may finally have come.

SYNDICATED LOANS

They are committing smaller amounts to loan facilities than six or 12 months ago and are looking more rigorously at documentation. One experienced syndicator commented yesterday that "pricing has gone back in favour of the banks".

closely monitored is the \$500m loan for the about-to-be-privatised British Energy, because many banks avoid lending to the nuclear energy industry.

Pemex highlights compression of emerging market spreads

By Conner Middelmann

The surge in emerging-market issuance continued yesterday, with \$500m of two-year bonds for Petroleos Mexicanos (Pemex) highlighting compression of spreads for borrowers in emerging markets.

its June 1995 launch level of 185 basis points. The D-Mark issue is expected in late June via CS First Boston and Deutsche Morgan Grenfell.

basis points over bonds, was considered by some to be tight. However, Deutsche Morgan Grenfell reported good sales in Asia, including lead orders from joint book-runner Daiwa.

Libanais plans to launch a three-year eurobond via Merrill Lynch, while Pakistan is to issue \$150m of 4 1/2-year floating-rate notes via Citibank.

NEW INTERNATIONAL BOND ISSUES

Table with columns: Borrower, Amount, Coupon, Price, Maturity, Face, Spread, Book-runner. Lists various international bond issues with their respective details.

WORLD BOND PRICES

BENCHMARK GOVERNMENT BONDS

Table with columns: Country, Coupon, Maturity, Price, Yield, Week ago, Month ago. Lists benchmark government bond prices for various countries.

US INTEREST RATES

Table with columns: Instrument, Rate, Yield. Lists US interest rates for various instruments.

BOND FUTURES AND OPTIONS

FRANCE

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists French bond futures and options prices.

GERMANY

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists German bond futures and options prices.

UK GILTS PRICES

Table with columns: Instrument, Price, Yield, High, Low, Est. vol., Open int. Lists UK gilt prices.

EURO BOND FUTURES (LIFE) DM250,000 points of 100%

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists Euro bond futures prices.

ITALY

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists Italian bond futures prices.

ITALIAN GILT, BOND (LIFE) FUTURES (LIFE) Lm200m 100ths of 100%

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists Italian gilt and bond futures prices.

Spain

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists Spanish bond futures prices.

UK

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists UK bond futures prices.

US

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists US bond futures prices.

Japan

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists Japanese bond futures prices.

FT-ACTUARIES FIXED INTEREST INDICES

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists FT-actuaries fixed interest indices.

FT FXED INTEREST INDICES

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists FT-fixed interest indices.

FT/ISMA INTERNATIONAL BOND SERVICE

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists FT/ISMA international bond service data.

Other Fixed Interest

Table with columns: Instrument, Price, Change, High, Low, Est. vol., Open int. Lists other fixed interest instruments.

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CURRENCIES AND MONEY

MARKETS REPORT

Dollar reaches 28 month high against yen

By Philip Gawth

Renewed concern about the stability of the Japanese financial system yesterday helped the dollar rally to a 28 month high against the Japanese yen.

The collapse of a Japanese mortgage lender, the eighth such institution to collapse in 18 months, dampened recent speculation of a possible tightening of monetary policy, which had lent some strength to the yen.

Speculation that the Tankan survey of business conditions, due for release later this week, would be weak also bolstered this view that monetary policy is likely to stay on hold.

The dollar finished in London at ¥109.025, from ¥108.285, against the D-Mark it finished at DM1.5315, from DM1.5265.

The yen was weaker against the D-Mark, finishing at ¥171.15, from ¥170.87.

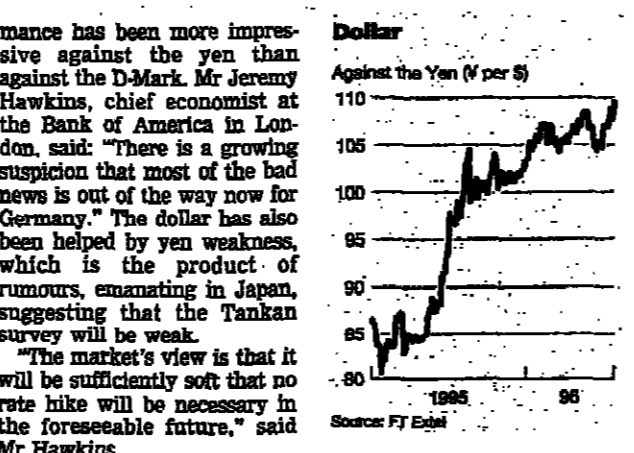
In Europe the focus was on Spain, where the central bank caught the market off guard by cutting the key money rate to 7.25 per cent from 7.5 per cent.

Less surprising was the decision by the Swedish Riksbank to cut the repo rate to 6.3 per cent, from 6.5 per cent, the twelfth cut this year.

Sterling maintained its firm showing of recent days, with the trade weighted index closing at \$5.5 from \$5.3. It was little changed against the dollar at \$1.5498, from \$1.5488, but gained nearly a penny against the D-Mark to finish at DM2.3741, from DM2.365.

The trade weighted index is still around 15 per cent below sterling's nominal exit level from the ERM in September 1992 and about nine per cent below in real terms.

The dollar's recent performance is spread in New York: Jun 4 - Last - Prev. Close - Jun 4 - Last - Prev. Close - Jun 4 - Last - Prev. Close



Source: FT Index

Not everyone, however, believes the dollar's prospects are better against the yen than the D-Mark. Indeed, economists at Chase in London hold the contrary view. They argue that dollar/yen is likely to range trade owing to shifting expectations about the path of Japanese interest rates.

They have, however, raised the German forecast to DM1.60, citing ERM pressures on the D-Mark and the prospect of German fiscal consolidation forcing widespread trading in the summer.

The Spanish rate cut was ahead of expectations and was taken by the market as clear evidence that the Bank of Spain is actively trying to weaken the peseta, something senior officials have recently been trying to achieve through verbal intervention.

Support for this view lies in the fact that the central bank has chosen to cut rates before the release of the May inflation figures, despite disappointing data in April.

Perhaps of more consequence in Europe were developments in Scandinavia where the Finnish markka and Swedish crown both rallied on renewed talk about early entry into the ERM. The catalyst for this was legislative initiative in Finland to allow such a move to take place.

"People are clearly speculating on the possibility of an early move into the ERM on the part of both currencies."

This had a knock on effect to the Italian lira, despite some disappointing data recently about government borrowing. The lira finished at L1,008 from L1,011, while the krona closed at SKr4.372, from SKr4.387.

Mr Eric Asbrink, Sweden's new finance minister, denied speculation that Sweden, Italy and Finland were planning to hold talks later this month aimed at planning a combined entry into the ERM.

Mr Robin Aspinall, market strategist at National Australia Bank in London said such a "co-ordinated act of Maastricht masochism" was only possible because the dollar's rally had taken pressure off non-core currencies.

"But the dollar is now peaking... which means that this threatens to be a classic example of mis-timing."

POUND SPOT FORWARD AGAINST THE POUND

Table with columns: Jun 4, Closing mid-point, Change on Day, Bid/offer spread, High/Low, One month Rate, Three months Rate, One year Rate, Bank of England Index.

DOLLAR SPOT FORWARD AGAINST THE DOLLAR

Table with columns: Jun 4, Closing mid-point, Change on Day, Bid/offer spread, High/Low, One month Rate, Three months Rate, One year Rate, JP Morgan Index.

OTHER CURRENCIES

Table with columns: Jun 4, Last, Prev. Close, Jun 4, Last, Prev. Close, Jun 4, Last, Prev. Close.

CROSS RATES AND DERIVATIVES

Table with columns: Jun 4, Bid, Offer, DM, SF, etc. Includes sub-sections for D-MARK FUTURES, JAPANESE YEN FUTURES, SWISS FRANC FUTURES, and STERLING YEN FUTURES.

UK INTEREST RATES

Table with columns: Jun 4, Over-night, 7 days notice, One month, Three months, Six months, One year.

EUROPEAN CURRENCY UNIT RATES

Table with columns: Jun 4, Euro unit rates, Rate against Euro, Change on day, % +/- from previous, % spread, Div. yield.

BASE LENDING RATES

Table with columns: Name, Rate, Name, Rate, Name, Rate.

THREE MONTH EURO/DOLLAR (MM) \$1m points of 100%

Table with columns: Jun, Open, Last, Change, High, Low, Est. vol, Open Int.

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THREE MONTH EURO/DOLLAR (MM) \$1m points of 100%

Table with columns: Jun, Open, Last, Change, High, Low, Est. vol, Open Int.

pricing... back in... of banks

WORLD INTEREST RATES

Table with columns: MONEY RATES, Jun 4, Over night, One month, Three months, Six months, One year, Lomb. inter., Da. rate, Repo rate.

EURO CURRENCY INTEREST RATES

Table with columns: Jun 4, Short term, Three months, Six months, One year.

THREE MONTH EURO/DOLLAR (MM) \$1m points of 100%

Table with columns: Jun, Open, Set price, Change, High, Low, Est. vol, Open Int.

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LONDON SHARE SERVICE

ALCOHOLIC BEVERAGES

Table listing shares in the Alcoholic Beverages sector, including company names and their respective share prices.

Table listing shares in the Banks, Merchant sector, including company names and their respective share prices.

Table listing shares in the Banks, Retail sector, including company names and their respective share prices.

Table listing shares in the Breweries, Pubs & Rest sector, including company names and their respective share prices.

Table listing shares in the Building & Construction sector, including company names and their respective share prices.

Table listing shares in the Building Mats & Merchants sector, including company names and their respective share prices.

CHEMICALS

Table listing shares in the Chemicals sector, including company names and their respective share prices.

Table listing shares in the Distributors sector, including company names and their respective share prices.

Table listing shares in the Diversified Industrials sector, including company names and their respective share prices.

Table listing shares in the Electricity sector, including company names and their respective share prices.

Table listing shares in the Electronic & Electrical EQPT sector, including company names and their respective share prices.

Table listing shares in the Engineering, Vehicles sector, including company names and their respective share prices.

Table listing shares in the Extractive Industries sector, including company names and their respective share prices.

ELECTRONIC & ELECTRICAL EQPT - Cont.

Continuation of the Electronic & Electrical EQPT sector table.

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EXTRACTIVE INDUSTRIES - Cont.

Continuation of the Extractive Industries sector table.

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HOUSEHOLD GOODS

Table listing shares in the Household Goods sector, including company names and their respective share prices.

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INVESTMENT TRUSTS - Cont.

Continuation of the Investment Trusts sector table.

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Advertisement for MIRACLE contract hire and fleet management, featuring a logo and contact information.

Table listing shares in the Engineering - Cont. sector, including company names and their respective share prices.

Table listing shares in the Food Producers - Cont. sector, including company names and their respective share prices.

Table listing shares in the Gas Distribution sector, including company names and their respective share prices.

Table listing shares in the Health Care sector, including company names and their respective share prices.

Table listing shares in the Investment Trusts - Cont. sector, including company names and their respective share prices.

Table listing shares in the Investment Trusts - Cont. sector, including company names and their respective share prices.

Table listing shares in the INV TRUSTS SPLIT CAPITAL sector, including company names and their respective share prices.

LONDON SHARE SERVICE

INV TRUSTS SPLIT CAPITAL - Cont.

Table listing investment trusts with columns for name, price, and change.

OTHER INVESTMENT TRUSTS

Table listing other investment trusts with columns for name, price, and change.

INVESTMENT COMPANIES

Table listing investment companies with columns for name, price, and change.

LEISURE & HOTELS

Table listing leisure and hotels companies with columns for name, price, and change.

LEISURE & HOTELS - Cont.

Table listing leisure and hotels companies (continued) with columns for name, price, and change.

LIFE ASSURANCE

Table listing life assurance companies with columns for name, price, and change.

MEDIA

Table listing media companies with columns for name, price, and change.

PHARMACEUTICALS

Table listing pharmaceutical companies with columns for name, price, and change.

OIL EXPLORATION & PRODUCTION

Table listing oil exploration and production companies with columns for name, price, and change.

OIL, INTEGRATED

Table listing integrated oil companies with columns for name, price, and change.

OTHER FINANCIAL

Table listing other financial companies with columns for name, price, and change.

OTHER FINANCIAL - Cont.

Table listing other financial companies (continued) with columns for name, price, and change.

PAPER, PACKAGING & PRINTING

Table listing paper, packaging and printing companies with columns for name, price, and change.

PHARMACEUTICALS - Cont.

Table listing pharmaceutical companies (continued) with columns for name, price, and change.

PROPERTY

Table listing property companies with columns for name, price, and change.

PROPERTY - Cont.

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Rockwell Automation is leading technological innovation with more than 500,000 products for a broad spectrum of industries. Rockwell logo.

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GUIDE TO LONDON SHARE SERVICE
Prices for the London Share Service delivered by FT Edit, a member of the Financial Times Group.
Company classifications are based on those used for the FT-SE All-Share Index.
Detailed information on the service is available on page 28.

FT MANAGED FUNDS SERVICE

FT Cityline Unit Trust Prices are available over the telephone. Call the FT Cityline Help Desk on (444 171) 873 4878 for more details.

OFFSHORE AND OVERSEAS

BERMUDA (SIB RECOGNISED)

Table listing Bermuda (SIB Recognised) funds with columns for fund name, price, and change.

BERMUDA (REGULATED)

Table listing Bermuda (Regulated) funds with columns for fund name, price, and change.

GUERNSEY (SIB RECOGNISED)

Table listing Guernsey (SIB Recognised) funds with columns for fund name, price, and change.

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IRELAND (SIB RECOGNISED)

Table listing Ireland (SIB Recognised) funds with columns for fund name, price, and change.

IRELAND (REGULATED)

Table listing Ireland (Regulated) funds with columns for fund name, price, and change.

ISLE OF MAN (REGULATED)

Table listing Isle of Man (Regulated) funds with columns for fund name, price, and change.

JERSEY (SIB RECOGNISED)

Table listing Jersey (SIB Recognised) funds with columns for fund name, price, and change.

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JERSEY (REGULATED)

Table listing Jersey (Regulated) funds with columns for fund name, price, and change.

LUXEMBOURG (SIB RECOGNISED)

Table listing Luxembourg (SIB Recognised) funds with columns for fund name, price, and change.

LUXEMBOURG (REGULATED)

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FT MANAGED FUNDS SERVICE

FT Cityline Unit Trust Prices are available over the telephone. Call the FT Cityline Help Desk on (+44 171) 873 4878 for more details.

Main table containing various fund listings with columns for fund name, price, and other details. Includes sections for 'OFFSHORE INSURANCES' and 'OTHER OFFSHORE FUNDS'.

MANAGED FUNDS NOTES
Prices are shown unless otherwise stated.
Units are shown in pence unless otherwise stated.

LONDON STOCK EXCHANGE

MARKET REPORT

Bid hints help stocks close at session highs

By Steve Thompson, UK Stock Market Editor

A much more bullish mood was evident in London's stock market at the close yesterday. Dealers spoke of the potential for imminent corporate activity, possibly involving a counter-move on Lucas Industries by BBA, but there were plenty of other rumoured bid candidates, especially in the composite insurance sector.

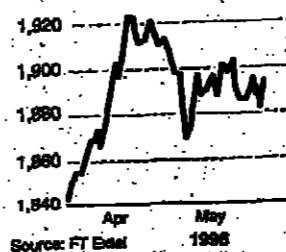
of £800m by selling its controlling stake in its bottling plant joint venture with Coca Cola. The prospect of another burst of takeover activity, plus a much needed rally on Wall Street, helped the FT-SE 100 index recover from a mid-morning bout of uncertainty and close the session in good heart. The index was finally a net 16 points higher at 3,755.2. There was no such enthusiasm for the second-line, however. The FT-SE Mid 250 index, burdened by a handful of profits warnings, retreated 13 points to 4,492.5. The warnings came from a wide range of areas, including specialist chemicals companies such as Inspec, and banknote printer De

La Rue. Midland Independent Newspapers was another company forecasting lower than expected profits. Helping to drive the market forward was a two-way trading programme, weighted on the buy side and executed by Merrill Lynch during the early afternoon. Earlier, the market had faltered after a relatively good start. Wall Street's Monday night slide, which saw the Dow Jones Industrial Average slip an index 23 points, and the yield on the long bond to the 7 per cent mark, caused no real problems. The Footsie rose by more than 8 points shortly after the opening, but quickly ran out of steam as the big institutions showed reluctance

to push money into the market. Gilt prices crept higher at the outset and posted gains of around 6 ticks, before slipping back to level around lunchtime. The afternoon brought a strong turnaround for the market, however. The Merrill trading programme and the strong opening performance by Wall Street provided a shot in the arm for equities, which were additionally helped along by a firm US bond market. Shortly after Wall Street opened, the Dow was up some 20 points, and showed a gain in excess of 40 points an hour after London closed. A senior marketmaker at one of the big European securities houses

said the London market felt 'explosive' just before the close of trading, with the market being carried along by big gains in many of the banks and insurances and on the prospects for more bids. "A lot of the big funds have been underweighting London over the past few sessions on the view that Wall Street is about to take a bath; but the reality is that the US has already had its correction and is due a rally," the marketmaker said. Turnover in equities by the 5pm reading had reached \$42.9m shares, with non-FT-SE 100 stocks comprising 64 per cent of the total. Customer business on Monday was valued at £1.26bn.

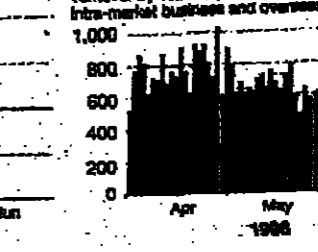
FT-SE-A All-Share Index



Indices and ratios table with columns for Index Name, Value, and Change. Includes FT-SE 100, FT-SE Mid 250, FT-SE-A All-Share, and FT-SE-A All-Share Yield.

Best performing sectors table with columns for Sector, Change, and Index Name. Includes Gas Distribution, Banks: Retail, Food: Packaged, Tobacco, and Retailers: Food.

Equity shares traded



Turnover by volume (million) table with columns for Index Name, Value, and Change. Includes FT Ordinary Index, FT-SE-A Non-Fin p/e, FT-SE 100 Fut. Jun, 10 yr Gilt yield, and Long gilt/shorty yield ratio.

Worst performing sectors table with columns for Sector, Change, and Index Name. Includes Paper: Pkg & Printing, Electricity, Electronic & Elect Equip, Extractive Industries, and Textiles & Apparel.

Lucas deal talk hits BBA

Engineer BBA moved sharply lower as talk about a possible spoiling bid for Lucas Industries ran rampant in the market. Most analysts took the story with a sackful of salt.

With a stock market capitalisation of £1.3bn, BBA is valued at £800m less than Lucas, which recently announced plans to merge with Varty, of the US. "The group could possibly run to a deal of up to £500m with the aid of a rights issue, but an offer for Lucas makes neither financial or strategic sense," said one leading engineering analyst.

Yet BBA does have a stated ambition to grow by acquisition. "It could well be up to something. The last big deal from BBA coincided with an analysts' trip to Switzerland. The company plans an analysts' visit to Sweden later this month," commented a trader.

BBA shares, which have performed strongly relative to the market over the past 12 months, receded 11 to 317p. Lucas added 5 at 249p in solid looking volume of 7.5m.

Cadbury surges

The market spotlight was firmly fixed on food producer Cadbury Schweppes after the company said it is to sell its 51 per cent stake in CCB to Coca-Cola Enterprises. The sale, mooted some time ago but not expected this

month, drove the shares sharply ahead. They jumped 17 to 689p, making Cadbury the best performer in the Footsie. Turnover of 18m made it the day's second most active trade. Part of the move was attributed to the sale, though the session also saw the return of bid speculation to the stock.

Several analysts were pleased by the move and said that the deal made sense in both the UK and US context for Cadbury.

However, Ms Sally Jones at Credit Lyonnais Laing was lukewarm on the deal and remains cautious on the stock. She said: "I thought this business was worth more, and all the other question marks, such as its relationship with Coca-Cola, remain." Coca-Cola remains a bottle to some of Cadbury's leading brands in the US.

United Biscuits, long rumoured as a possible target for Cadbury, rose 3 to 21p. However, one analyst said this was a knee-jerk reaction. He said Cadbury had made it clear that further acquisitions would be in the confectionery and beverages businesses.

Profit warnings

London's lower tier indices were hit by a wave of profits warnings - particularly in the printing and publishing sector.

Most damaging in terms of capitalisation was an announcement from De La Rue, the banknote printer. The company reported a flat profit of £147.5m for the year to March and warned that low banknote prices and difficult trading in the cash systems division were continuing. It

said interim profits would be lower than last year. Brokers downgraded forecasts. Credit Lyonnais Laing provisionally cut its full-year estimate to between £140m and £145m from £152m previously. De La Rue fell 65 to 656p.

Inspec, the specialist chemical manufacturer, tumbled 58 to 284p after the group announced that trading for this year would be below current market expectations, with mixed performances from its businesses so far.

Finally, a profits warning knocked Midland Independent Newspapers by 24 to 123p. The company also said it had pulled out of buying several titles owned by Emap.

Emap, which repeated comments from the annual general meeting that it had "expected a slow start to the year", retreated 27 to 679p. It said that the newspapers in question were being sold for £211m to

Johnston Press, which made a £11m rights issue to help pay for the deal and closed 4 higher at 211p. Eurotunnel continued to race higher in heavy turnover, topping the FT-SE Mid 250 performance charts for the second day running, in spite of what was seen in London as a slightly negative statement from the Channel tunnel operator.

The group reiterated that the end of June remains a target date for a debt restructuring deal. But that shareholders "must not underestimate the uncertainties which continue and will continue to affect the timetable or the substance of our negotiations". The shares, which stood at 80p at the beginning of May, surged to another new 1996 high, rising to 115 1/2p. The Paris bourse was again the main centre of activity, with nearly 15.5m shares traded, the

heaviest single-day volume since September. Public houses group Regent Inns was in demand and the shares forged ahead 30 to 1150p. Reports suggested an agency cross at 1140p. The announcement that Swissair is prepared to make a £145m additional bid for Alders' duty free operations, subject to support from 40 per cent of Alders shareholders, caused a sharp rise in the stock market, but analysts expected the Alders share price to rise today on the news. Alders was unchanged at 199p.

Moss Bros rose 142 to 1280p as one or two marketmakers were caught short of stock. JJB Sports jumped 43 to 860p, with continuing interest on the forthcoming Euro-96 tournament which has kept the stock in demand for a few more months. One trader, who bought a shirt himself yesterday, said they were "flying out of the shop".

General Accident improved 10 to 673p as the latest in its series of presentations to analysts continued to impress. Vodafone, a weak market on Monday on the back of a possible Ofcom probe into mobile phone prices, rebounded as profits came in marginally above forecasts.

The group is holding margins in a competitive UK trading environment and the operations continue to make rapid progress. The stock added 4 1/2 at 25 1/2p in above average turnover of 20m, the day's heaviest Footsie volume. HSBC rallied 5 to 973p after Salomon Brothers upgraded current year forecasts for the group to £4.2bn from £4.13bn - which was already top of the range of analysts' forecasts.

Barclays rose 16 to 774p, with dealers' support after a presentation at SBC Warburg. Yorkshire Water bounced 5 to 794p ahead of figures due today. In spite of Monday's harsh comments from the reg-

ulator, hopes remain that the company might announce a share buyback. Thames Water slipped 1 1/2 to 573p in spite of confirming its intention to buy back 10 per cent of its shares. Full-year figures were in line with analysts' forecasts, but the shares have risen strongly in response to the sector's recent takeover activity.

Pharmaceuticals group SmithKline Beecham gained 15 1/2 at 674p after the company received US marketing clearance late on Monday for new paediatric dosages of its antibiotic drug Augmentin. It also launched a new treatment for cold sores as a prescription product in the UK.

MARKET REPORTERS: Peter John, Joel Kibazo, Jeffrey Brown, Lisa Wood.

FUTURES AND OPTIONS

FT-SE 100 INDEX FUTURES (LFFS) table with columns for Index Name, Open, Settle, Change, High, Low, Est. vol, and Open int.

FT-SE 250 INDEX FUTURES (LFFS) table with columns for Index Name, Open, Settle, Change, High, Low, Est. vol, and Open int.

FT-SE 100 INDEX OPTION (LFFS) table with columns for Index Name, Open, Settle, Change, High, Low, Est. vol, and Open int.

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TRADING VOLUME

Major Stocks Yesterday

Table of trading volume for major stocks, including columns for Stock Name, Volume, and Change.

FT GOLD MINES INDEX

Table of FT Gold Mines Index with columns for Index Name, Value, and Change.

FT-SE Actuaries Share Indices

Table of FT-SE Actuaries Share Indices with columns for Index Name, Value, and Change.

The UK Series

Table of The UK Series with columns for Index Name, Value, and Change.

Italian Lire 100,000,000,000. CREDIOP S.p.A. Floating Rate Notes Due 2001. In accordance with the provisions of the Notes, notice is hereby given that for the Interest Period from May 31, 1996 to November 29, 1996 the Notes will carry an Interest Rate of 6.45% per annum.

S&A SOCIETE GENERALE ACCEPTANCE N.V. FRF 500,000,000 REVERSE FLOATING RATE NOTES DUE DECEMBER 2003. For the period June 03, 1996 to September 02, 1996 the new rate has been fixed at 8.80375 % p.a.

LEGAL NOTICES. THE PORT AUTHORITY OF NY&NJ. AIRPORT ACCESS PROGRAM. Request For Qualifications (RFQ) and Industry Review of Procurement Documents for Jamaica-JFK LRT System.

CONTRACTS & TENDERS. GOVERNIO PARANA. COPEL. SALTO CAXIAS HYDROELECTRIC POWER STATION. IGAUQUA RIVER. INTERNATIONAL COMPETITION C-302. ISOLATED-PHASE BUSES. CALL FOR BIDS.

Hourly movements. FT-SE 100, FT-SE Mid 250, FT-SE-A 350. Table showing hourly price movements for various indices and sectors.

Hourly movements. FT-SE 100, FT-SE Mid 250, FT-SE-A 350. Table showing hourly price movements for various indices and sectors.

Hourly movements. FT-SE 100, FT-SE Mid 250, FT-SE-A 350. Table showing hourly price movements for various indices and sectors.

WORLD STOCK MARKETS

Table of world stock markets including Europe (Austria, Germany, France, Italy, UK), Belgium/Luxembourg, Czech Rep, Denmark, Finland, Greece, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Taiwan, Thailand, and Toronto. Columns include stock names, prices, and changes.

Advertisement for Peregrine Global Distribution. Features a bird in flight and the text: 'Asian Focus. Global Distribution. Peregrine has the world's largest team dedicated to the international distribution of Asian securities.'

Table of world stock markets (continued) including South Korea, Taiwan, Thailand, and Toronto. Columns include stock names, prices, and changes.

Table of world stock markets (continued) including Australia, Brazil, Canada, China, Colombia, Czech Rep, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Taiwan, Thailand, and Toronto.

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4 pm close June 4

NEW YORK STOCK EXCHANGE PRICES

Main table of stock prices with columns for stock symbols, prices, and changes. Includes sections for 'Bid', 'Lucidea hits', and 'Vault ahead'.

Bid

By Steve Thom UK Stock Mark

A much more evident in London the close yesterday of the potential rate activity, countermove by BBA, but other rumors especially in the aerospace sector.

Lucidea hits

Engineer f lowers as it spooler in trials ran Most anal with a siation of need at \$9 which r plans to the US. \$500 million issue, but makes i strategic engi

Cad

The firmly Cadbi comp per Coca-Th ago

Vault ahead

If the business decisions are yours, the computer system should be ours.



http://www.hp.com/go/computing



Continued on next page

NYSE PRICES

Table of NYSE stock prices including columns for stock name, price, change, and volume. Includes sub-sections for 'Continued from previous page', 'T', 'U', 'X-Y-Z', and 'AMEX PRICES'.

NASDAQ NATIONAL MARKET

Table of NASDAQ National Market stock prices including columns for stock name, price, change, and volume. Includes sub-sections for 'Continued from previous page', 'T', 'U', 'X-Y-Z', and 'AMEX PRICES'.

Table of AMEX stock prices including columns for stock name, price, change, and volume.

Table of AMEX stock prices including columns for stock name, price, change, and volume.

Advertisement for Norway. Text: 'Have your FT hand delivered in Norway.' Includes a large 'Norway' logo and contact information for financial services in Oslo, Stavanger, and Trondheim.

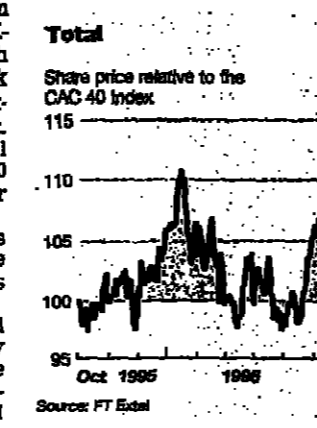
AMERICA Dow picks up after gains in \$ and bonds

Wall Street US share prices were stronger at mid-session yesterday as the yield on the benchmark 30-year bond fell comfortably below 7 per cent and investors tried to set positions ahead of Friday's release of May payroll figures...



EUROPE Sweden celebrates 12th repo rate cut this year

An old-fashioned rally in financials took over STOCKHOLM, where the Swedish crown soared, the Riksbank cut interest rates and the banking sector climbed 2.6 per cent. The Affärsvärlden General index broke through 2,000 again, closing 22.2, or 1.4 per cent, higher at 2,000.77.



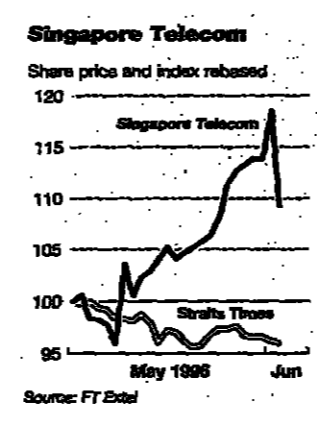
little depressed, presumably on interest rate fears, but Deutsche Bank put on DML10 at DM72.43. Ms Barbara Altmann of B Metzler said that a few positions were taken last week on the KHD affair, and that there may have been short-covering yesterday.

election results had sent the index sharply lower on Monday. The FTSE 100 finished 0.8 better at 5314. Blue chips, which bore the brunt of Monday's losses, bounced back. SPT Telecom jumped Kcs5 to Kcs3.276 and the power utility CEZ was up Kcs20 to Kcs1.150.

Canada Toronto was steady in mid-session trade, lagging behind Wall Street after both markets posted a moderate correction on Monday. The TSE-300 composite index was 3.51 higher by noon at 5,238.10 in volume of 49.8m shares.

ASIA PACIFIC SingTel plunges as spec favourites recover in Tokyo

An 8 per cent plunge in Singapore Telecom dragged SINGAPORE's Straits Times said institutional profit-taking had dented SingTel and Singapore Technologies Industrial Corp, both of which had risen sharply ahead of their inclusion in the Morgan Stanley Capital International index.



company PT Super Indah Makmur, which scored Rp1,076, or 78 per cent, to Rp2,450 on Monday on talk of better profits, and another Rp300 yesterday before subsiding to close Rp425 higher at Rp2,875.

for benefited from expectations that a number of large-scale projects, involving personal communications services, would be launched soon. Korea Mobile Telecom rose Won30,000 to Won700,000, Samsung Electronics, which fell sharply in recent days due to falling semiconductor prices, rose Won2,500 to Won4,500.

Mexico adds 1.2%

Mexico City moved 1.2 per cent higher in late morning trade, propped up by a firm peso and the healthy performance on Wall Street. The IPC index was up 39.49 at 3,231.27 in bullish trade as investors also began buying pesos on expectations that rates would rise in last night's Ceres auction.

Tokyo

Speculative stocks recovered after the sharp declines which unnerved investors on Monday, and the Nikkei average gained 1.3 per cent to 8,235.70, with 178 issues unchanged.

S Africa ends off day's highs

Johannesburg finished off its best levels as morning buying, spurred by hopes of an interest rate cut, tapered off and made for a subdued afternoon session. Golds were quiet, tracking the dull bullion price, as analysts cautioned that gold shares looked expensive at their current levels, compared with the bullion price.

Roundup

Karachi was closed as a mark of respect following the death of one of its members. JAKARTA decided that Indonesian tariff deregulation would help textiles and footwear, but while textiles gained, they were mostly small-capitalisation second-liners. Selling of big blue chips left the JKSE composite index down 8.56, or 1.4 per cent, at 615.92.

Table with columns: FT/S&P ACTUARIES WORLD INDICES, NATIONAL AND REGIONAL MARKETS, US Dollar Index, etc. Includes data for various countries and indices.

Fortis AG Capital increase by means of an exchange of 1995 dividend rights for shares ("Stock dividend") Meeting on 11 April 1996, the Board of Directors of Fortis AG decided to increase the capital of the company by means of an exchange of 1995 dividend rights for shares ("stock dividend"), as follows:

Handwritten signature in Arabic script: محمد بن احمد



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IT in sport
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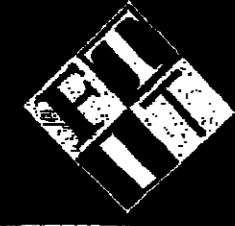
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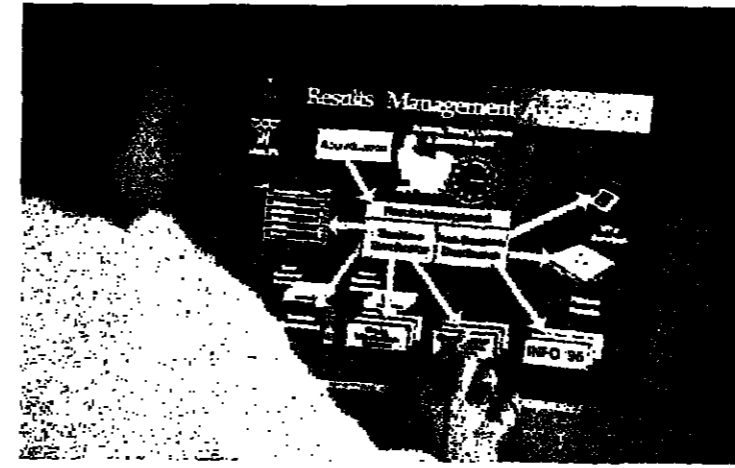
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Information Technology

Wednesday June 5 1996



Preparing for the summer Olympics: main picture, far left, a 'results team' works with computers at a cycling test event; in the centre, top picture, a demonstration of the advanced on-screen results management system which will be used in Atlanta; in the build-up to the games, computer-aided design systems were used to model the new venues; elsewhere in Atlanta, a pen-based computer system, pictured above, right, is used by a technology volunteer to input statistics at a badminton test event.
Pictures: Allsport/Jamie Squire

Sporting world offers an unrivalled showcase for technology

From motorsport and football to athletics and yachting, sports sponsorship is big business for IT suppliers. IBM, for example, is among the sponsors of the 1996 Olympic Games, described as the most technologically-advanced sporting event in history



The Summer Olympics
● Attendance: 10,000 athletes from 197 countries, 5,500 coaches and staff, 15,000 media representatives, 71,000 staff and volunteers, and 2.5m spectators; 11.2 tickets issued.
● TV broadcasting: 67 per cent of the world population is expected to watch the games, making a cumulative TV audience of 3.5bn.
● Computer technology: four main-frame computers, 80 AS/400 servers, more than 7,000 desktop and notebook PCs, at least 1,000 laser printers and 250 local area networks.
● Telecommunications: 13,000 telephones including 1,700 wireless phones, more than 6,000 pagers, at least 8,500 radios, more than 500 fax lines and 11,500 televisions.
● Other IT facts: the Olympic Web page (<http://www.atlanta.olympic.org/>) is expected to attract between 5m or 10m 'hits' a day.
● Info '96, the Olympic database, contains 80 gigabytes of Olympic history, equivalent 394,000 typewritten pages - sufficient for a paper path between London and San Francisco.
● The games themselves are expected to generate three trillion characters of information, enough to fill a daily newspaper for the next 30,000 years or the same as a stack of double-spaced typewritten pages 95 miles high.
● During the 16 days of competition, printers will produce 30m pages of facts and figures for the media. With more than 540 sessions spanning 26 sports, the Olympic committee expects to process 3,000 ticket requests an hour.

Two sporting spectacles this summer - the Olympics and the European Football Championship - will provide the world's leading information technology companies with an unprecedented opportunity to display their products and services. Indeed, given the scale, complexity and costs involved in organising and running such events, it is doubtful whether they could take place at all without using IT and enlisting the help of IT industry sponsors. Overall, North American companies will spend an estimated \$3.5bn on sponsorship of sports this year. And while the information technology industry lags behind makers of cars, cigarettes, soft drinks and other household products in total spending, it is among the fastest-growing sectors in the sports sponsorship field. Aside from International Business Machine's sponsorship of the summer Olympics in Atlanta, Georgia, Hewlett-Packard is backing World Cup Soccer, and a racing car team. 3Com, the Silicon Valley networking equipment com-

pany, has put its name on the San Francisco 49er's football stadium. Sports sponsorship may appear to be a symbol of corporate largesse. In reality, it is big business. Corporate sponsorships of sporting events - which can range from a few thousand dollars to tens of millions - typically produce public "exposure" valued at around ten times the cost of the sponsorship, according to marketing experts. This goes well beyond attracting the attention of fans in the stands at a sporting event. Television coverage of an event raises the stakes, while opportunities to entertain corporate customers are another draw. The IT industry is, however, moving beyond the traditional use of corporate sponsorship as a form of "brand marketing". In many instances, computer and software companies also provide the equipment and information technology services required by big events. As with other large events, international sports championships are logistical nightmares. For example, organising the

Olympic games is the equivalent of holding two American Football Superbowls every day for 17 days, or the same as hosting the final stages of 20 soccer World Cups simultaneously. For Euro '96, Sema Group, the Anglo-French computer services group, Microsoft, the US software developer, Digital Equipment and British Telecommunications have combined to form the technology team which is responsible for providing technology for the matches which will take place across eight football grounds in Wembley. Everyone involved in the tournament, including 6,000 media representatives, over 2,000 staff and players, 1.4m ticket holders and a cumulative television audience of 6.5bn will rely on the technology. Among the projects they have already completed is the accreditation system which streamlines the normal lengthy registration process for the more than 8,000 people involved with the championship. In addition to the accredita-

tion system, other interrelated applications include the VIP management, volunteer management and materials management systems, the information system and the results service. These systems will all work together on a common platform based on Digital hardware and Microsoft Windows NT software allowing the exchange of data between systems. There will be media and administration centres in each of the eight cities. All of the systems in each venue will be linked on a local area network, and all the cities will be linked to a central server using an ISDN (integrated systems digital network) wide area network. Meanwhile, IBM has already built extensive information technology systems for the summer Olympics. During the

build-up to the games, for example, IBM has provided three-dimensional virtual reality systems used to simulate stadiums still under construction. Bob Stiles, Olympic Stadium venue manager, recalls a visit by 500 National Olympic Committee officials: "They were in Atlanta to review the status of Games preparation and were keenly interested in the (then incomplete) Olympic stadium," he said. Stiles was able to show his guests a three-dimensional computer simulated view "walk through" of the structure, (see picture, above, centre). IBM is one of the main sponsors for the Olympics, which will involve 10,000 athletes, from 197 countries competing in 271 events at 30 different venues. Over the course of the Games, approximately 67 per cent of the world population is expected to view some part of the sporting events. With no local or national government money to be spent on this year's Games, approximately 70 per cent of the Atlanta Committee for the Olympic Games' \$1.7bn budget will come from sponsorship.

According to sponsorship industry experts, about 20 companies will spend \$40m or more to become either "domestic partners" of the Olympic organisation or "worldwide sponsors", another 23 lesser sponsors will each spend \$4m to \$20m. Among IBM's other contributions to the Olympics are an electronic mail system to link all athletes, coaches and trainers, an extensive library of Olympics information on the Internet and on-site touch-screen terminals that provide event schedules and venue maps. Perhaps the most visible part of the information technology systems at the Olympics, however, will be the results system, also built by IBM, which will provide virtually instant updates on the scores and times of all events and the performance of individual athletes. IBM believes that the Olympic Games provide "an unrivalled showcase" for its technology. The company began sponsoring Olympic events 36 years ago and has already committed to sponsoring future Games in Nagano

and Sydney. Similarly, Hewlett-Packard is sponsoring, and helping to facilitate World Cup soccer. This involves building systems to link ten venues prior to the final games that will take place in France in 1998. Already, plans are well under way for systems to handle ticketing, accreditation of players, coaches and other team staff, transportation and logistics. These are "mission critical applications" that will demonstrate HP's technology in action, says Katey Kennedy, HP's manager of the World Cup project. The sponsorship is the largest ever undertaken by HP which has also sponsored racing car teams, Americas Cup yacht teams, soccer and rugby clubs. For HP, the World Cup also represents an opportunity to promote its brand name among sports fans, particularly in Europe and South America, at a time when the company is expanding its involvement in retail and consumer markets for personal computers and printers.

Continued on page 2

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Sporting challenges for the IT industry

No second chances

Around the world, few sporting events are staged without the involvement of information technology. There are special considerations which are not found in a normal commercial environment. Here, Rod Newing outlines some of the unique problems and opportunities

Imagine setting up a \$1.6bn corporation with 252 offices in 100 cities and 140,000 employees all linked by computer, telephone, digital TV, cellular and radio. Imagine you run it for 17 days and then you shut it down - that's the Atlanta Olympics.

Around the world, few sporting events are staged without the involvement of information technology. The most advanced applications of IT in sport will be at the 1996 Olympic Games in Atlanta in the US. Organising the games is the equivalent of hosting the final stages of 30 soccer World Cups, simultaneously. The games are likely to be watched by nearly two-thirds of the world's population.

Key role

It will also play a crucial role in Euro 96 - the finals of the European football championship being held in the UK between June 8 and 16. Euro 96 which is the largest sporting event in Europe this year.

Apart from these sporting spectacles, IT is also essential to a wide variety of other activities such as motorsport, baseball, sailing, cricket and tennis, to name a few.

Even at the small club and local event level, simple database applications are now used

together.

The larger events have become so complex that they could not be planned, managed or operated without the support of the IT industry through the provision of hardware, software, services, expertise, project management, key systems, worldwide telecommunications and technology transfer.

Whatever the event, it will require a number of systems, including accommodation, accreditation, computer-aided design, event-scheduling and information systems for media and accredited personnel.

United projects

Then there is materials management, medical, project management, recruiting and managing volunteers, results, retail merchandising, security, ticketing, transportation, VIP management, weather forecasting and many others. It is important to remember that these are not just a series of stand-alone applications, but must all be linked to share the same data.

System re-use is essential to minimise the risk and cost of development. Such is the involvement of IT that organisations such as BT, IBM, EDS, Sema and Sybase, take a long-term view, using their expertise and systems in a wide range of events. In the case of the Olympics, IBM has been involved since 1980, at the Squaw Valley Winter Olympics in California, which were the first to use IT.

IBM's current agreement with the International Olympic Committee runs from 1992 to 2000, with an option to extend to 2004. Meanwhile, Sema's expertise in sports results will

be used at Wimbledon tennis championships; the company's systems will also be used at the Mediterranean games.

With the expansion of the Internet, sporting events of many types must now have their worldwide web sites which have proved to be highly popular, attracting large numbers of accesses from fans. Results are becoming increasingly scaleable, using powerful parallel processing servers. (see report below).

Another issue with sporting events is the volume and frequency of result updates, allowing computer users to chart the progress of events, as well as receiving results and accessing event information. "It is closer to broadcasting than publishing," says Jose-Luis Iribarren, IBM's Manager of Olympic and Sports Internet Systems.

Another problem which sporting events pose is the need for total reliability without an opportunity for a... full-scale test - "there can be no overall dress rehearsal, only the components can be tested," says Martin Clague, general manager of worldwide client-server computing at IBM.

"The systems must be architected against failure," he adds.

Sport on the Internet - By Stephen McGookin

Wired-up sports fans log-on for computerised, collated statistics

The Net is a natural medium when it comes to analysing and presenting the kind of intensive statistical information on which sports analysts depend

Every time Tottenham's Teddy Sheringham scores yet another Premiership goal; or Cecil Fielder hammers a home run out of Detroit's Tiger Stadium; or Charles Barkley loops in a three-pointer for the Suns, there's someone, somewhere, who lives for the stat.

And with the proliferation of fantasy sports games on both sides of the Atlantic over the past couple of years, there are countless thousands of Internet users who log in regularly to keep up to date with the exploits of sporting heroes they might never actually watch in the flesh.

In the US, fantasy leagues are big business and there are hundreds of companies selling computerised, collated statistics, custom-tailored to the needs of armchair sports fans, for whom a black and white box score can literally bring a game to life.

Visitors to the site will be getting practically the same information as journalists in the tournament's eight media centres, with the aim being for the site to be updated from the results service approximately every 10 seconds.

The site has exclusive rights to television and radio highlights throughout the tournament, and it also features a Fan Forum, similar to an interactive Usenet newsgroup.

But over and above the hundreds of bulletin boards, chat rooms, newsgroups and mailing lists where sporting performances can be critiqued and debated, the Net is a natural medium when it comes to analysing and presenting the kind of intensive statistical information on which sports analysts - amateur and professional - depend.

More dimensions

PowerPlay, an Internet-based product from Massachusetts company Cognos, is capable of processing a high volume of statistical data and presenting it in a way that lets the user see it "multi-dimensionally" - in multiple combinations or views; similar, as the company says, to turning the faces on a Rubik's Cube.

For instance, using PowerPlay to analyse baseball statistics allows the viewer to ask very detailed questions relating to the performances of teams and individual players in specific situations.

If he really needs to, a fan could find out how well a particular player hits against right-handed pitchers in night



RUBIK BENE

games on the road during August; with two outs in the seventh and runners in scoring position.

Ketan Karia of Cognos says the company is developing and expanding the applications for the technology specifically for Europe and the UK.

While soccer tournaments are a natural, there is also the more serious business of politics. With a general election looming, tracking individual daily opinion polls and analysing their findings could be made easier and much more productive.

"With this product, you just throw the data at it and it gives you breakdowns from lots of different angles," says Karia.

The corporate applications are also extensive, he believes. "Companies don't always realise that their information is a commodity. We're targeting organisations who have lots of data locked up and trying to change the way they use their information."

PowerPlay, which recently won PC Week's IT Excellence award, is the world's most

widely-used software for this form of online analytical processing. Details are available at the Cognos web site (www.cognos.com).

With the centennial Olympics coming up in Atlanta, IBM expects the official games Web site (www.atlanta.olympic.org) to generate between five and 10 million hits - or about three million visits - a day.

The information logistics of holding two Superbowls every day for 17 days, or 20 World Cup finals simultaneously - means the challenge of getting the results out quickly and accurately has never been greater.

While this is the first time Olympics results have been accessible through the Web, IBM believes the official site will be "the closest thing to being at the Games."

The Atlanta Journal-Constitution's Olympics countdown site (www.ajc.com/olympics/olympics.htm) is also well worth a browse.

Looking even further ahead, EDS is the official information technology services provider of

the 1996 World Cup Finals in France, and is planning to build on its success at the last finals in USA '94.

But for the wired sports fan, there are literally more sports Net sites out there than you can shake a Louisville Slugger at.

Use a search engine to narrow down exactly what you want, but as far as originality and general sports enjoyment goes, there are one or two worthy of a special mention.

- Baseball: check out Fastball (www.fastball.com), the Cox newspapers' site which makes extensive use of RealAudio to provide hourly sports updates.

Entertaining

Sportline USA (www.sportline.com) is an excellent subscription-based service which among a wide range of hugely entertaining material, has a 'live' play-by-play facility which shows a graphical representation of every game in progress together with automatically refreshed box scores.

John Skilton's Baseball Links (www.pc-professor.com/baseball/) is one of the most comprehensive and well-presented resource pages, with excellent coverage of the minor leagues and top-notch stats links.

- Soccer: Absolutely the place to start is the Virtual Library (www.atm.ch.com.ac.uk/sports/webs.html), which has links to nearly every soccer site on the planet.
- Basketball: The official NBA site (www.nba.com) presents the corporate face of the game while Grant's Basketball Links (www.cyberbase.net/%7Egrant/sports/basketball/) collates more hoops links than the average fan could ever need.



Satellite systems in the round-the-world yacht race now transmit position, course and speed, four times a day. Pictured here: Heineken leads Winston in the Whitbread round-the-world race for the Heineken Trophy

FT

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The next issue, July 5:
 Main Focus: Networking
 IT Directions: Multimedia in Entertainment and Education
 Software: Internet Software Tools.

September 4 issue:
 There is no review in August; the main themes for September will include:
 Focus on Computers in Finance.
 IT Directions: Systems Support and Security.
 Software: Accounting Packages.

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The high value of sports sponsorship

Continued from Page 1

As is typical of most sports sponsorship contracts, HP will be given prime billing on event literature and at promotional events. Beyond that, however, it is up to the company to leverage its investment in the sporting event, said Ms Kennedy.

This may involve advertising linked to the event, press guides and events, billboards and promotions with local dealers in places where the World Cup is heavily watched.

In the motor racing world, *officials* of Grand Prix will follow the Saturday afternoon qualifying session almost as closely as the race itself on the following day. The fastest time gives pole position and, on many tracks where overtaking is virtually impossible, a huge impetus towards victory.

Accurate timing is vital. Since 1982 the Swiss company TAG Heuer has been the official Formula One timekeeper and also a sponsor of the Ferrari and McLaren teams. The margin for error is almost non-existent, since success or failure can hinge on a thousandth of a second.

In the media centre and in

the pits, press and engineers rely totally on a series of five computerised screens provide by TAG which show lap times, average speeds on different sectors, and a continually updated table of fastest drivers. During practice or qualifying, with up to 26 teams on the circuit the flow of information can be astonishing.

"Formula One presents the company with one of our greatest challenges, where split-second accuracy and precision must be totally guaranteed," said TAG Heuer chief executive Christian Vitz.

Golf might seem the antithesis of Formula One, a sport where hours not micro-seconds are the temporal currency. Yet the complexities of recording and relaying the results in a key competition such as The Open are a challenge to information technology.

Four days of play, 126 players over 72 holes and a public and media demand for a real-time leader board gives the service provider a major challenge.

Unisys has been the Royal & Ancient's partner since 1980. It now deploys hand-held radio terminals at each green to send results directly to a central

scoring system. From there it goes back to leader-boards scattered around a course that may be up to 10km in length.

It takes around 14km of cabling to service the 100 PC workstations and printers dotted around the course. Two Unisys servers (one for back-up) are based at the course in a trailer. "We have to run from 7am until 10pm with zero downtime," says David Fox of Unisys. "We can't afford a failure. Apart from the scoring system for officials and spectators, we provide computer graphics for the BBC and other TV broadcasters."

Yet the geographical demands of a golf course are as nothing compared with the spread of a round-the-world yacht race. In September this year, the BT Global Challenge sails from Southampton. Fourteen yachts racing a 32,000-mile course over a 10-month period. Gone are the days of map-tracticle and pop over high frequency radio. Each boat has an Inmarsat C terminal that will transmit position, course and speed four times a day, more often if requested.

At race headquarters BT

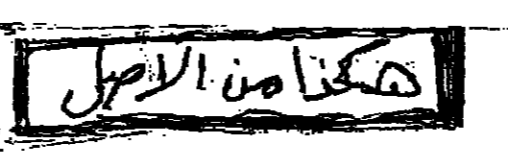
staff will make the data available via dial-in database that anyone with a fax can download from. In addition the current positions and situation will be constantly available from a World Wide Web site.

The Internet's multimedia capability means there are likely to be audio and video clips available from crews and skippers whilst the yachts are at sea, making Cape Horn an audience-friendly as the local football stadium.

There are, of course, risks attached to sports sponsorship. In the World Cup, for example, teams representing countries that are prime markets for HP could be knocked out in the early rounds.

Scandals involving athletes, violence in the stands, bad weather that forces the postponement of a big event, political tensions leading to an Olympics boycott, the crash of a sponsored race car - could significantly reduce the value of a company's investment in sponsorship.

Yet industry experts maintain that the high value of sports sponsorships that place a company's name in the view of millions of sports fans, far outweigh the potential pitfalls.



IT in sport

Electronic results systems • By Rod Newing

Scoring with pin-point accuracy

As many 'live' sports events attract worldwide audiences, instant sports results have such a high profile that the behind-the-scenes information systems cannot be allowed to fail

When it comes to results, broadcast to 150 countries, "you can't get it wrong - because if you do, several hundred million viewers will know a few seconds before you do", warns Martin Trees, marketing director of Sema Group, who are the lead technology sponsor to Euro 96.

"Quality is so important because the results system provides an automatic 'feed' to a live TV graphic," he says. This sums up one of the many challenges which face IT companies responsible for the systems which record sports events as they happen.

While an event is in progress, systems are needed to

record statistics, provide them to broadcast commentators, along with competitor details and to record results. When the event is over, the results need to be made available to the organisation itself, officials, athletes, media and the world at large. These high-profile systems are "mission critical" and must not fail.

The results exercise has to be done not once, but repeated over and over again: the Olympics, for example, involve 26 sports with 37 disciplines and 271 medal events at 27 venues.

The results system for Euro 96 involves 31 large-scale soccer events at eight grounds. It is also vital that these systems are intuitive and easy to use,

because users may not be computer literate and will have no opportunity for training. The Olympic information system will have 150,000 users.

All events tend to fall into one of four broad categories, which are team events, judged events, timed and head-to-head events. These systems can be shared within their category, but must allow customisation to each event.

Laptop PCs

At the Atlanta team events, volunteers stationed at event sites will be equipped with customised pen-based laptop computers with interfaces that duplicate the sport's field and uses sport-specific language and symbols for likely events and players.

The 'pen' allows observers to touch the screen symbol of a player, then a spot on the field of play and then an action which occurred. This allows

non-technical volunteers to register the action as it happens, such as capturing which basketball player just made an assist or which football player scored a goal.

The system can be configured for different sports and provides a feed through a wireless local area network (Lan) to the results, information and Internet systems.

Euro 96 has a similar system to the one in Atlanta, but it uses a Digital Ultra II-Note pen-based system with a mouse, which users prefer.

At judged events, officials enter scores, which are then forwarded to the head judge who holds approval or veto power. In events such as gymnastics, where scores are averaged, the approved marks are automatically averaged to deliver the final score.

Other systems capture details of times events, which are then communicated to the results system. For instance, at an Olympic track event, Swatch measures time, speed and distance by using a high-speed camera that samples the image of the finish line thousands of times a second. This information is digitised and integrated into the results system.

Having captured statistics and results at the venue, the system must compute the meaning of this score within the context of the competition and transmit the data to a variety of integrated information systems. Systems must be constantly improved to keep up with the public thirst for information - "with the results system, you have to keep it simple, but deliver something new and exciting to the customer," explains Mr Trees.

Every large event has to keep everyone involved up-to-date with what is going on, which is done through information kiosks. These provide reference material, such as competitor biographies and images, event history, current records, schedules, transportation, weather forecasts and entertainment. These kiosks also provide key information such as latest sports headlines, news flashes, full results, statistics, new records and so on.

Electronic-mail and bulletin boards are also provided at the Olympics, allowing competitors, officials and the media to communicate with each other.

This system needs to be updated regularly from the results system: at the Olympics this is done every two minutes.

Commentaries

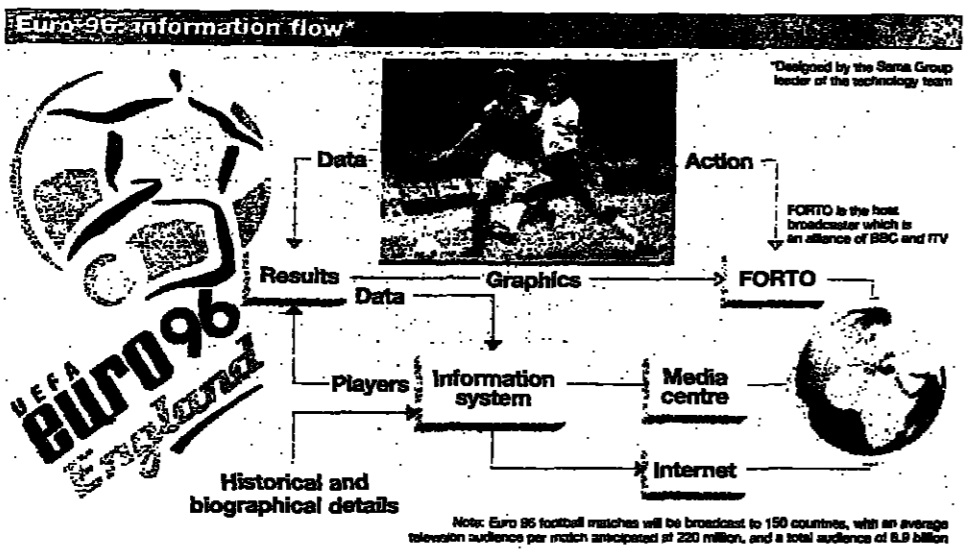
The broadcast media need to be able to provide up-to-date information, so a commentator information system is required. This takes a 'feed' from the results system to show statistics about the current event and results from others which are going on at the same time, plus another feed from the information system to provide athlete biographies and statistics.

Commentators need to log in with their nationality, so the system can highlight information on their national athletes.

"The biggest problem with results systems is the requirement not to interfere with the event," says Bruce Sanders, from IBM's 1996 Olympic Games Project Team. "Back-up and redundancy is needed at every stage in the system, as event schedules cannot be missed because of faults in timing or scoring systems."



Paul Gascoigne in action: while rival teams across Europe were in intensive training in the run-up to Euro 96, England players, returning from the Far East, were caught up in a blaze of publicity as the Football Association - the hosts of the tournament - later launched an investigation into an incident during a 13-hour flight on a Cathay Pacific 747, in which two video screens were smashed causing £5,000 of damage during a party to celebrate Gascoigne's 29th birthday. Last Sunday, the England squad resumed training at their Burnham Beeches headquarters. Euro 96 is expected to generate total revenue of more than £150m.



Euro 96 • By Michael Dempsey

Technology team with a very serious goal

Euro 96 presents a big technical challenge for the Sema Group and its IT partners

The 16 national teams participating in Euro 96 have their hearts firmly set on sporting glory. Martin Trees, marketing director of Sema, the £700m European systems and services group, has an even more serious goal: Sema will be earning a large chunk of the £10m being shared between the four technology partners organising Euro 96.

But Mr Trees reckons that in its role of co-ordinating efforts by BT, Microsoft and Digital Sema can put its own name on the map - "to be realistic, we're doing this purely for the marketing," he says. This sporting event offers Sema the chance to prove its ability to create a virtual company in next to no time under a glare of media attention.

By the first kick-off on June 6, Sema will have delivered the management systems to run a 10,000 strong company. This commercial entity will have sprung out of nowhere, and will have no inherited management structure.

Accreditation and keeping track of VIPs is a big headache in the largest footballing event staged in England for 30 years.

Furthermore, members of the media corps following the championships have differing levels of access to matches and venues. Behind the badge carried by every player there will be a database of human details, covering everything from dietary requirements to the level of security required. Clearly, some nations are

considered as more sensitive than others in the security area. Sema, which has considerable experience in this field through contracts with the French military - among others - is justifiably tight-lipped about certain elements of the accreditation process.

Badges, for example, will only be produced at the last possible moment: given a tight timescale, there can be no room for error in the data attached to 15,000 badges. Meanwhile, Microsoft has performed a key role in sorting out accreditation. Philip Stradling, Euro 96 project manager at Microsoft, explains that while Sema developed much of the system specification in Barcelona, his people helped shift a team of experts in the large mainframe computer environment over to the world of Windows 95.

"We put people out there to 'hold hands' and to get over product information and key issues about the client server side of things," he says.

Graphics

The importance of graphics in transmitting coverage of sporting events played up to the products in which Microsoft excels. The company's experience in easy-to-grasp graphical interfaces was needed if UK Football Association staff were going to come to terms with the new system in a very short time.

Mr Stradling says Microsoft entered the Euro 96 consortium in the autumn of 1995. With Microsoft's best-selling Office software package, a standard project tool set of graphics were needed to bridge the divide between that software and the accreditation system - "we integrated office

and accreditation systems with one interface because we don't know from one day to the next who'll be using which system for what purpose," he says.

The idea is to build an environment where users can switch from one role to another without being aware of moving to a different system.

Graphics, as Microsoft has long proclaimed, are a useful way to cope with different types of data. So Microsoft echoes Sema's ambition of using a football championship to get a deeper message across.

The four IT partners each have separate contracts, says Mr Stradling.

"At Microsoft, we get marketing rights, promote our brands during championships and get across the Microsoft message that we're not just about consumer software. We are a serious company for business. And this event is Microsoft software from tip-toe."

Mr Trees and his colleagues appear to thrive on the scale of the challenge. Euro 96 will come into being with an impressive inventory of mobile phones, laptop computers and associated software packages that all need to be tracked and returned after the event.

Sema's 100-strong team, to be boosted to more than 1,000 during the event, have created an asset register from scratch. He contends that "building this system from the bottom-up using completely fresh applications - and the latest computer servers from Digital - has given his colleagues enough space to get the job done."

"The exploitation of client-server architecture, with clusters of PCs wired into powerful Digital servers, will deliver IT

Continued on next page



Looking ahead to Euro 96: the Sema Group, Digital, Microsoft and British Telecom have developed and supplied the IT solution and business support structure for the European football championships. Pictured here at the Football Association, London, (left to right, standing) is Adam Wharby of Microsoft, Martin Trees of Sema and David Townsend of Digital. In the front row is Sir Burt Mitchell of the Football Association with Vanessa Miner of BT and Stephen Clemence, England under-18 player

In April 1996 Personal Computer Magazine gave the Hewlett-Packard Vectra XM4 a highly impressive test-drive.

"Vectra wins: HP's Vectra XM4 gets our vote as the best piece of corporate kit. It is easy to maintain, but can stand up to punishment. HP is a very credible partner...and has a finger in almost every high-technology pie." PCM also found the HP Vectra far ahead of its peers for compatibility, build quality, maintainability and service and support.

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■ Euro 96 security • By Danny Bradbury

Troublemakers will face swift police action

While the international TV audience for each match will exceed 200m, the police will be discreetly making their own on-the-spot networked security videos

Ten police forces in the UK have constructed Britain's largest-ever computerised "football intelligence" operation for the Euro 96 tournament this month. Police forces including the London Metropolitan Police, British Transport Police, Merseyside, Strathclyde, Greater Manchester, West Midlands and Nottinghamshire constabularies are collaborating on a nationwide digital database which allows them to digitally transmit information on potential troublemakers in between regional centres. The information, including pictures of potential and known troublemakers, can also be transmitted to and from police vehicles located near the 31 matches being played at eight cities across England. Mobile officers using Toshiba Pentium laptops with Photo-phone software can extract frames from hand-held video

cameras and send them directly to other mobile units or to a regional site for general dissemination. The project will provide links into similar systems run by the British Transport Police, Scottish Criminal Intelligence Football Unit and the National Crime Information System (NCIS). Designs for the advanced system began early last year and equipment was distributed in April. The computers were connected up to the Police National Network in May. The system uses eight Sparcstation 30 workstations (worth £100,000), loaned from Sun Microsystems, running the Crimint database system, supplied by MR-Memex. Information will be transferred over cellular phones from police cars to the Sun computers based at regional intelligence centres. Information can also be transferred between servers across the country using the Mercury

Communications Police National Network. Det Chief Supt John Barker, who is senior investigating officer for Euro 96 at the London's Metropolitan Police, explains the benefits of the system: "It will enable us all to share information about potential troublemakers, known troublemakers and incidents that have occurred which will help us to define how we will approach incidents in each area."

A typical solution may involve a person who is being disorderly when boarding a train for a championship venue. Police officers can transmit a picture of the person to a mobile unit at the destination site, which could then observe the troublemaker at the match. In addition, details on the person's history could be accessed by the mobile unit, if he was a known offender.

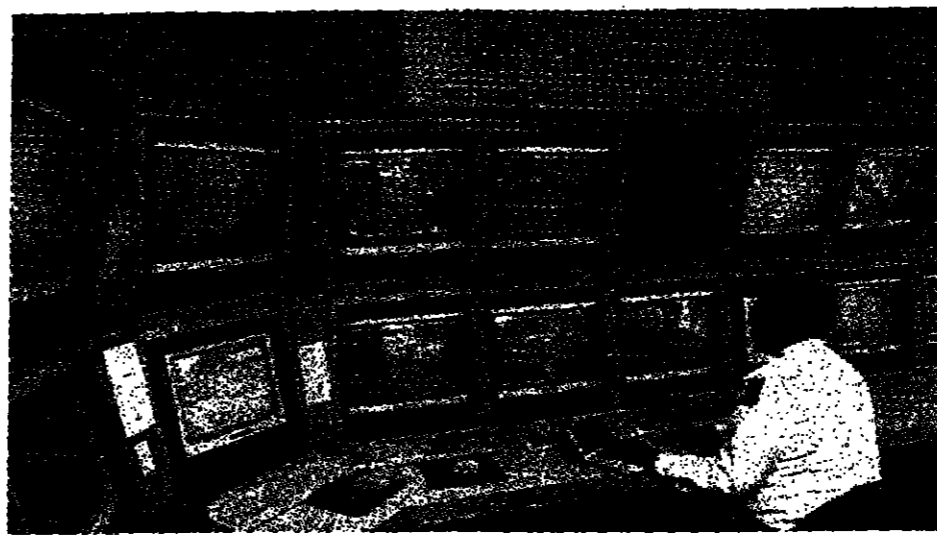
Det Chief Supt Barker emphasises the logistical difficulties of communicating without such a system - "It would have been down the telephone, by fax or telex. We wouldn't be

operating from the same protocols, so there might be different information stored on one regional system than on another. This system ensures that there are standard protocols with built-in safeguards to ensure public protection."

Mr Paul Oatway, head of the hybrid networks branch within the Metropolitan Police department of technology, says that the Metropolitan force has been "back-pedalling" Crimint from an existing operational installation especially for Euro96.

The Metropolitan force has sized the database for Euro96 at 30,000 intelligence reports. "Crimint is a textual intelligence database - and that text can be either in fields of names or attributes of individuals," he says. Pictures will be stored alongside text in the database for transmission.

The systems will be linked to the 12 database from the Cambridge-based company of the same name. This product allows the police to visualise networked relationships between people, locations and football clubs.



■ Olympics' ticket distribution • By Marcia MacLeod

Bad news for ticket touts

The ability to follow any parcel of tickets from collection to delivery worldwide gives organisers and buyers strong confidence in the distribution service

Eleven million tickets for the Olympic Games will be available worldwide, but even that high number may not be enough to prevent disappointment among last-minute visitors, hit by a late attack of Olympic fever. Ticket touts will be hoping for a corner of the market.

The anticipated demand for tickets has led the Atlanta-based global parcels carrier, United Parcel Service (UPS), one of the 12 official sponsors for the Games and the company responsible for distributing tickets around the globe, to devise a security strategy which would defy even James Bond.

A "closed loop" package tracking system, based on the Delivery Information Acquisition Device (Diad), pictured below, links the UPS global tracking network with the ticket-order database, run by the Atlanta Committee for the Olympic Games (Acog). This system assigns each ticket order a unique tracking number which can be traced over the UPS system by the carrier's staff or Acog employees.

Each package of tickets is bar-coded and scanned as it moves through UPS's hub-sorting equipment. Location information is fed automatically into the Acog database. UPS

details - for example, "ten packages, each holding 100 Olympic tickets" - are displayed on the screen.

When a collection has been completed, the driver keys confirmation of the pick-up into the hand-held, noting any discrepancies, such as "only five packages were ready for collection instead of ten".

Upon returning to his vehicle, the driver places the Diad in a Driver Vehicle Adapter (DVA) to download the collection details into the UPS mainframe.

The same process is followed for deliveries. The driver

obtains a list of the day's calls - the list having been downloaded overnight to the hand-held computers.

As a driver reaches a delivery site, the bar-code labels on the packages are scanned to enable the shipper's name and number to be entered into the system. The driver keys in the number of packages being dropped off and the time of delivery, and prints the name of the person accepting the package.

More importantly, the person receiving the goods also signs the hand-held unit with a special stylus to provide a digital signature and proof of delivery. This could prove especially valuable should any Olympic tickets go missing, or turn up in the wrong hands, since the person signing for the package should be traceable.

The hand-held computer is again slotted into the DVA to update the UPS mainframe, providing real-time track-and-trace capability throughout the package's journey.

The ability to follow any parcel from collection to delivery gives customers strong confidence in the service. In the case of tickets for the Olympics, that confidence is boosted by the knowledge that, for the 1996 Games, black marketers will be the only real losers.



This hand-held computer captures ticket delivery information electronically, including consignee's digitised signatures

Euro 96: 'The perfect IT exercise'

Continued from previous page:

"muscle" where it's needed. "If you're sitting in Wembley, you can find out where the VIPs are in Newcastle - it's all hubbed around our Birmingham data centre with automatic updating across the eight venues."

The use of a distributed database, essentially eight copies of the one product held in each of the participating cities, is key to the security of the whole event, explains Microsoft's Mr Stradling. "The unique thing about this accreditation is that takes place across eight locations. Accreditation is about who's allowed where, rationing limited amounts of space and dealing with security. "If there is a last-minute

change of a person's itinerary, we can issue a new badge from whatever stadium they are at. But at the same time we update the distributed database so there aren't two badges out there for the same person at the same time."

The other key aspect of this system is resilience. With eight current copies of the database, Euro 96 gets a level of data back-up many financial institutions would envy.

Creating an entire IT department out of thin air and focusing its efforts on a very specific sector is formidable enough. Sema knows that it will all disappear within 24 hours of the final whistle. "This outfit came into being a week before the competition starts and dies the day after

it," is Mr Trees' rather brutal summary of his new baby's lifespan. Sema thinks Euro 96 is "the perfect IT exercise... this plays to our forte, tying the latest technology together and guaranteeing it will be all work on time," says Mr Trees.

He sees three elements in the Euro 96 package - and two of them demand an uncompromising approach from the suppliers. "You can't change the quality - you only get one shot at the event. You can't change the timing. It starts on June 8 and if your systems are late for that, you are in big trouble. You can change only the resources you devote to it."

One development at Euro 96 is the advent of live TV graphics, fed from the championship

information system directly into TV feeds. When a red card is waved at a player, the offender's identity and other details will be tapped into the system by Sema, converted into an appropriate graphic, and flashed straight on to TV screens.

Mr Stradling sums up the way a sporting event has tested the mettle of commercial systems experts: "I've been involved in rapid development of applications before. But this system needed a big infrastructure, including all the dedicated telecom links from BT. The end-result might look straightforward, but knitting a total of 40 local networks together and creating one nationwide data network has been a big challenge."

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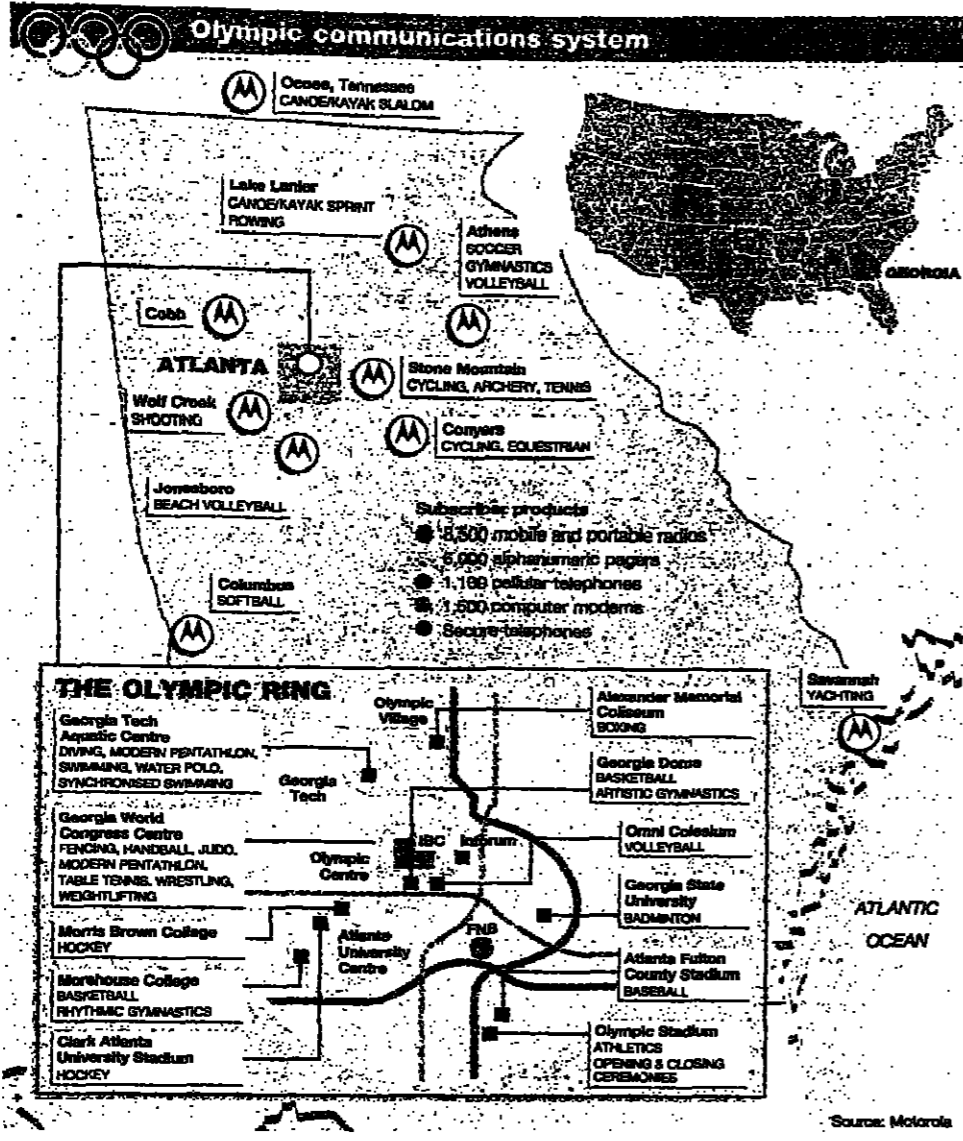
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IT in sport



Communications at the Olympics By Michael Winshire

System serves 70,000 staff

Motorola, the wireless communications company, has built the largest-ever two-way radio system for a peace-time event for use in this summer's Centennial Olympic Games.

The digital network has been designed to meet the needs of up to 70,000 staff and volunteers with a wide range of responsibilities - from security and event management to transportation, medical support, event scoring, timing, judging and proving catering services.

Motorola's support for the Olympic movement goes back 24 years. The new communications system has taken four years to plan. Mere Gilmore, executive vice president of Motorola, says: "The event requires an unprecedented range of wireless technology. In 1972, we equipped just a handful of coaches with two-way radios - today we are meeting the needs of tens of thousands of staff and volunteers."

Various Olympic sites in the greater Atlanta area are linked with Motorola's "SmartZone" technology to give wide area connectivity. For example, a user in Stone Mountain Park is able to speak to a user 16 miles away in the Olympic stadium.

The network also links with public safety agencies, allowing staff to interact with law-enforcement and emergency services. The system also supports 10,000 portable and mobile radios, 6,000 alphanumeric pagers, 1,500 cellular phones and 1,500 computer modems.

The Olympic Torch Relay began in the US on April 27 when the torch arrived in Los Angeles from Greece. During the relay, Motorola is supplying communications with two-way radios, cellular phones across 42 states, prior to the lighting of the Olympic cauldron in Atlanta on July 19.

Race to win the technical edge

Software lowers the cost of design and compresses development times in many areas of sport, writes Geoffrey Nairn

From the simplest tennis racket to the most advanced Formula One race car, powerful computer-aided design (Cad) software is now an essential weapon in sports where victory may hinge on a slim technological edge.

This is what the US Olympic cycling team will be hoping this summer in Atlanta, where its revolutionary SuperBike II track bicycle will compete for the first time. The bike was designed by US firm GT Bicycles using CADD 5 software from Computervision and is claimed to be the fastest, most aerodynamic bicycle built to date.

SuperBike II is the result of four years of intense research and development focused on building the ultimate track bike - "every little piece, even the chain, was looked at," says Forrest Yelverton, R&D director of GT Bicycles.

The chain was ultimately left unaltered but all other components have been redesigned using CADD 5 software running on Sun SparcStation workstations. The goal was a more aerodynamic bike, yet one that could also stand the heavy stresses of high-speed pursuit races.

According to Mr Yelverton, the CADD 5 software played a key role in allowing GT to model and manufacture the carbon fibre monocoque frame.

"The 'organic' surfaces are so complex that you can't draw them on paper and give them to a machinist," he says.

CADD 5, like other high-end Cad/cam packages, supports "parametric" modelling, which means the shape of components are expressed as mathematical equations rather than as absolute measurements. This allows complex designs to be easily and rapidly tried out

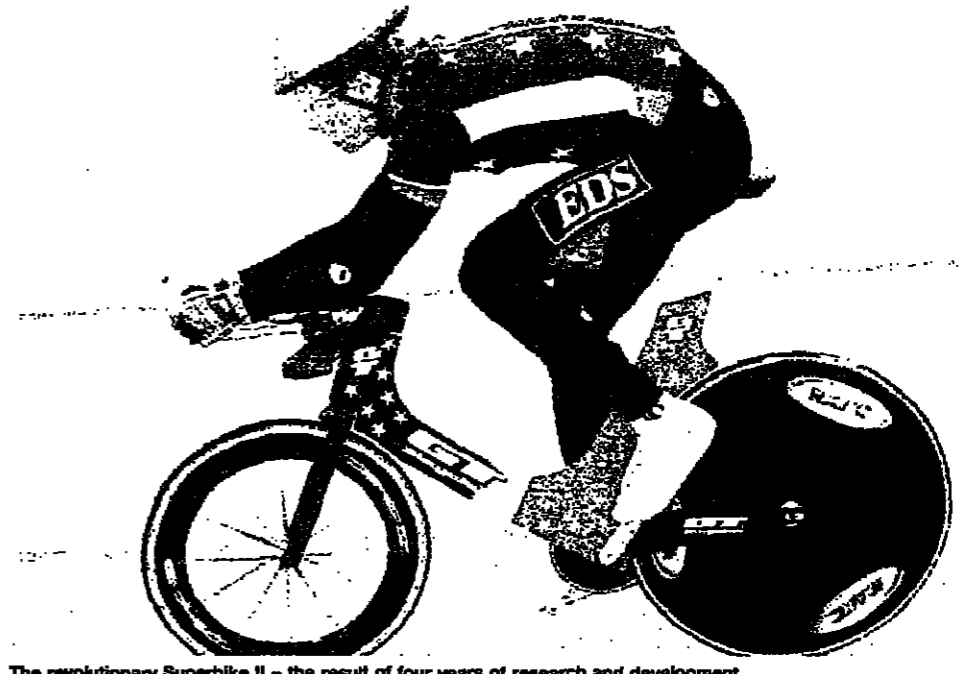
on screen by changing parameters in the formulae, so reducing the need to build physical prototypes.

For SuperBike I, a metal-framed predecessor to SuperBike II, parametric modelling allowed GT Bicycles to build a radically new bicycle in less than six months, completing it in time for a key race. With conventional methods they would have missed the deadline, says Mr Yelverton. Just one prototype was made and it worked so well it was used as a spare.

GT Bicycles also uses the parametric modelling capability of CADD 5 to scale up or down the designs of its mass-production bikes, so offering consumers a range of different frame sizes.

The sophisticated modelling capabilities of today's Cad/cam packages reduce the need for costly and time-consuming reworks later in the manufacturing cycle, so lowering design costs and compressing development times.

"Our business used to be about accuracy - now it's about



The revolutionary SuperBike II - the result of four years of research and development

reducing time-to-market," says Jim Duncan, UK general manager of EDS Unigraphics, the Cad/cam division of the EDS computer services group.

Tighter development cycles affect many industries, but in Formula One racing lead times are punishingly short. Teams have 14 weeks to design, build and test a new car before each season and modifications must

be made in the two weeks that separate one race from the next.

F1 cars must meet technical regulations designed to improve drivers' safety but also ensure the thrills and spills remain in the sport. A leading team such as Benetton, which uses Unigraphics Cad software, may redesign 70 per cent of the 3,500 components in

its cars from one season to the next in an attempt to exploit - the rules and achieve a technological edge.

Powerful Cad/cam software has become essential to F1 teams. "We literally don't have a drawing board here," says Richard Taylor, design engineer at Benetton.

Continued on next page

Weather forecasting By Geoffrey Wheelwright

Around-the-clock predictions

New software system ensures high accuracy for Olympics weather forecasts

Using advanced meteorological software developed at Colorado State University, the National Weather Service in the US aims to provide the most accurate weather forecasts for the Olympic Games in Atlanta this summer.

Using IBM's "visualisation data explorer", meteorologists will see weather data in two and three dimensions, thus enabling them to provide highly detailed predictions. The Olympics weather service will make three, six and 12-hour predictions, using an IBM

30-node RS/6000 SP computer system.

These forecasts will be posted on the Internet home pages of Olympic Games, the National Weather Service and IBM's own home page on the Internet. Weather data and graphics will also be available to games attendees and staff via IBM information kiosks located throughout the Olympic villages.

Apart from the localised weather services in Atlanta this summer, Internet users in the US who are planning sporting holidays can now find easier ways of checking the weather across the country - thanks to services such as the one run by the Weather Channel on US television and its World Wide Web site (<http://www.weather.com>).

The Weather Channel is a 24-

hour, seven-day television network devoted entirely to weather predictions. First broadcast in 1982 to a national audience of only 2.5m homes, the Atlanta-based network now boasts that it is seen in over 60m cable households. At any moment throughout the day, more than 130,000 homes are watching the channel.

The network broadcasts local daily forecasts for more than 4,000 National Weather Service zones across the country. However, regional and national forecasts are only part of the Weather Channel's programming - the network also offers special interest forecasts targeted to viewers with specific weather needs including general aircraft pilots, skiers, frequent flyers, gardeners, private craft sailors and

cross-country drivers.

Documentary programmes from the Weather Channel also explore environmental issues such as the greenhouse effect, the psychological impact of natural disasters, the world water supply, plus other climatological and meteorological issues.

The immediate real-time relay of severe weather watches and warnings is the most vital service provided by the channel - in both its TV and online electronic form. Information from the National Weather service is delivered to the network through complex satellite and computer links.

The Weather Channel has recently added facilities to monitor daily earthquake updates, local emergency warnings and other meteorological information services.

Mike wants to install Lotus Notes Release 4.

If 2,352 people in 8 departments will use it, how many servers will Mike have to add?

a) 8 b) 16 c) 24

The correct answer is: d) None of the above.

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By Steve Thom UK Stock Mark

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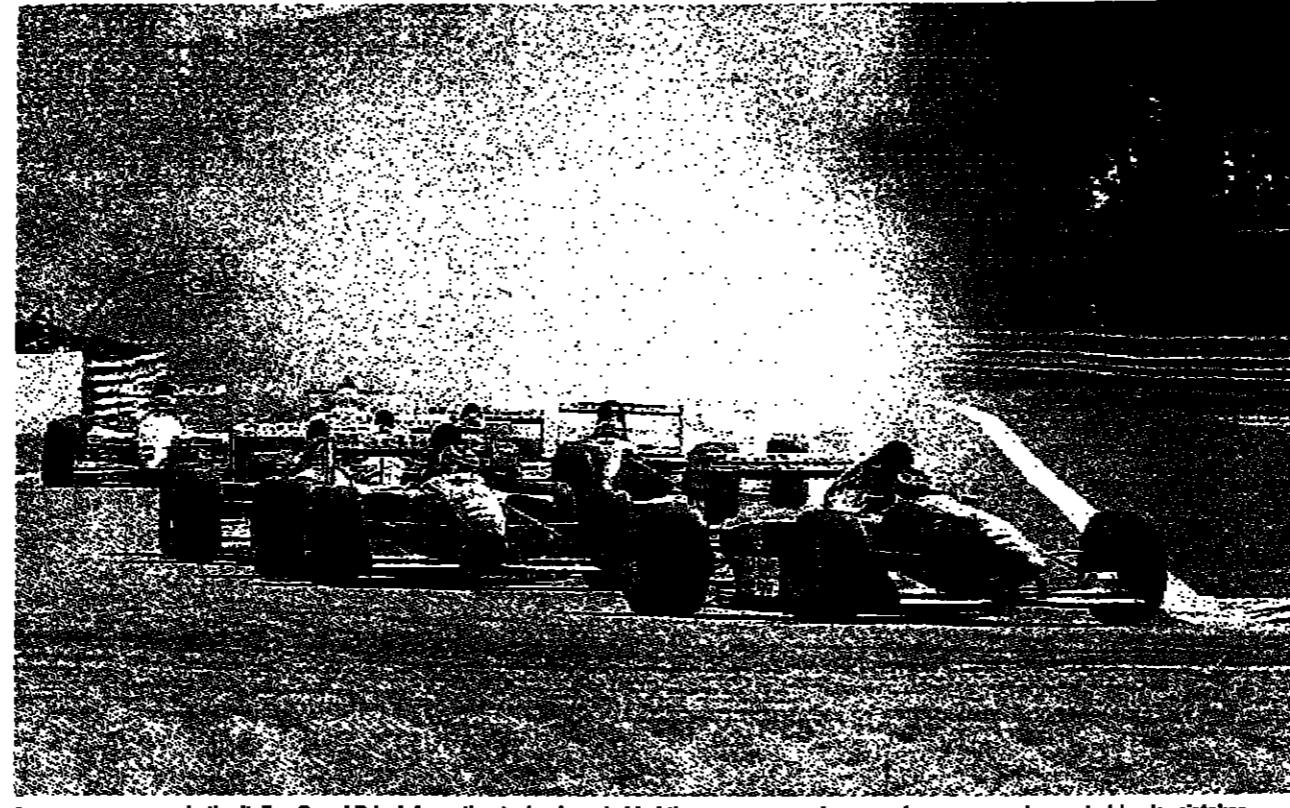
Motorsport

Capt. Kirk would be impressed

Grand prix cars are now 'test-driven' on computers before they are built. On and off the track, the electronics are so advanced that some observers ask if grand prix is really a sport at all

Were they to wander into the pit lane garage of a grand prix motor racing team on a race weekend, even Captain Kirk and the flight deck crew of that endless space 'soap' Star Trek would be impressed.

The banks of video monitors and computer screens flicker and constantly change. Before them sit earnest technicians as silent and intent as any on the Starship Enterprise.



As cars surge away in the Italian Grand Prix, information technology, behind the scenes, records car performances - plus each driver's mistakes, every nervous lift of the throttle before a bend... all revealed by a pitiless stream of computer printouts and bar charts

"seat of the pants" feel, that real performance will be measured against the computer-aided design, simultaneous engineering, computational fluid dynamics, finite element analysis and host of other IT-based techniques by which the car was created.

It should thus come as little surprise that, given this level of complexity, a leading grand prix team will employ 150 or more people, perhaps 70 of whom will travel to the 16

grands prix scattered each year around the globe. Nor do leading multinational sponsors express surprise any longer that Jackie Stewart, for example, estimates that he will need a budget of approaching £30m a year to run the new grand prix team he is setting up in partnership with Ford to take to the tracks in 1997.

It is undeniably a sport with a difference, depending as it does so heavily on a team's ability to source, develop and utilise the latest available technologies in order for the human resource - Messrs Michael Schumacher et al - to function at its full potential.

Race for winning designs

Continued from previous page

near with the Jordan Grand Prix team.

Jordan uses Precision Engineering Cad software from Hewlett-Packard running on HP 9000 workstations. While most of the design work is done in two dimensions, 3D is being increasingly used, particularly for modelling surfaces whose aerodynamic performance is critical.

"But by creating the 3D surface on computer we eliminate the human error in interpreting the drawings," says Taylor.

Details of every component are stored on the system, making them readily accessible if a car has to be modified in a hurry, for example. During the 1994 season, teams had just two weeks to implement significant design changes imposed by the sport's governing body following a spate of fatal crashes.

F1 racing may have the highest stakes and biggest budgets, but other sports are increasingly technology-driven. Manufacturers of golf clubs, rackets, skis and snowboards, for example, use new composite materials - and Cad-cam software - to design lighter, better performing equipment.

Cad systems are also being used to plan sporting events. The new Olympic Stadium in Atlanta, for example, can seat 85,000 people. But not all seats have an equally good view, so IBM used Cad systems running 3D visualisation software to determine which seats justified higher-priced tickets and where to place TV cameras.

Monitoring performance

Despite the huge lead Damon Hill had built up in this year's Monaco grand prix, he had so desperately wanted to win, he knew the attempt was doomed long before the engine of his Rothmans-Williams- Renault cried 'enough'.

Like an implacable judge passing sentence, the telemetry had told him - and the engineers in his pit - that there could be no reprieve. And no one doubted its word.

There was no point. It spoke with the authority of 100 electronic sensors; monitoring every engine function; streaming not hopes or fears but hard, cold data from car to pit.

Simultaneously, other telemetry streams were conveying their tales of woe, or 'all's well' or - most crucially - warnings to teams still surviving the mayhem in the streets of Monte Carlo.

Technology does not have all the answers

On the race track, electronic sensors monitoring every engine function, sending hard data from car to pit

ger, because for every message of 'no hope' it provides, over the course of a season and over all the teams, hundreds more that warn in time of mechanical problems ahead - and allow corrective action before catastrophe.

Such telemetry - once two-way to the extent that grand prix cars by now could have been driven by remote control, with no drivers aboard, had not the FIA governing body curbed it - covers all the operating functions of a grand prix car.

But an examination of just the system for the engine - in this case, the Cosworth unit of the Ford-Sauber team - gives

an idea of its complexity. The data outputs from all the engine sensors are captured by the engine control unit (ECU), itself pre-programmed to send relevant material to the monitors in the pits.

The raw information is also sent to a data storage unit in the cockpit which is both a data-logger and communications controller.

The data stored here is highly detailed, extractable on each pit visit and, transferred to a PC, can instantly expand on a problem which may have been shown up in outline on the telemetry.

ler of the data storage unit sends the telemetry data via a radio transmitter in one of the car's sidepods. It is received by a large antenna in the team's garage, linked to four receivers which, in turn, convey the data to a mainframe computer.

A second large aerial transmits important data to Cosworth engineers on the pit wall, where three more computers decode the data for display. Monitoring the screens, the engineers, detecting a problem, can instantly tell the driver to pit or turn the engine off.

The mainframe stores the data on disc for debriefings and future planning. Each of the two team cars also has a separate, dedicated monitor. On this display, engineers read data displayed in numerical form, in real-time,

suspensions, corner loadings and all the other dynamic parameters of performance beyond the engine.

Happily, however (at least in the view of some), it also remains one of motor racing's enduring attractions that even when showered with today's state-of-the-art IT technology, cars can still confound their designers and infuriate their drivers.

None of the current crop of grand prix cars, in truth, ever comes new "out of the box" fundamentally unreliable, or

handling, in racing parlance, "like a pig" - despite what a disaffected driver might say.

But the fractions of a second per lap which now usually mark out the winners from the also-rans, and which over a whole race can build into half-minutes and half-miles, clearly - as the race results repeatedly show - can continue to remain frustratingly elusive for some of the best-run and best IT-equipped of teams.

Technology does not have all the answers. Yet.

IT partnerships with motorsport

Motor racing has evolved into something far more meaningful than a few high-profile hardware outlets for IT companies such as Brockwell, Berkshire-based Hewlett-Packard and Coventry's Computervision.

For HP, and particularly its Service and Support division, its involvement with the Jordan team in grand prix and the Rahal team in IndyCars, provides stiff ongoing challenges to its technological, logistical and service capabilities because of the uniquely stressful, rapid-fire responses demanded in motor racing's highest echelons. And in doing so, it provides HP - as indeed, it does Computervision and other related rivals - with a perfect, global showcase for those capabilities. HP's ability, as an "insider", to usher guests - mostly senior executives of clients or would-be client companies offering big business

potential - discreetly and unobtrusively into the teams' pit lane control centres at the 16 grands prix all around the world - "is worth hundreds of site visits", says Geoff Banks, HP's sponsorship manager.

Jordan, based at Silverstone, was a logical choice for what, Banks makes clear, is very much a partnership. HP pumps no conventional "sponsorship" money as such into one of grand prix's youngest teams.

What it does do, he adds, is provide a wide variety of hardware, software systems and "24-hours-a-day, seven-days-a-week support for the team, whether at the Silverstone headquarters or anywhere in the world a team member can combine a GSM or satellite phone with a laptop or palm-top.

hardware for its telemetry. And Hewlett-Packard France is a long-time associate of Peugeot, the French vehicles producer whose engines power the Jordans. No less appropriately, Eddie Jordan's team was 'born' with IT-only systems - "I think it's the only GP team that has never had a drawing board," says Banks. "FI reaction times are minuscule, so it's a perfect training ground for a whole range of products and solutions. It also requires us - HP and Jordan, as a team - to be proactive and to plan ahead. Hardware on its own is not a solution."

Support means using any and ever system at hand. When everyone left for the this year's opening grand prix at Melbourne, for example, it was found that some key software had been left behind at Silverstone. HP located it, compressed the data into an e-mail and sent it via the Internet into a team laptop. A small

example of the meaning of partnership, Banks points out, but nevertheless a pertinent one.

Joint planning with the team is rigorous: "With any company you've got to know where you're going to be; but F1 is moving goal-posts all the time, so you have to update all the time."

One of the biggest steps forward has been the introduction of the 600 GT Omnibook portable PC to the team. Lightweight, it can communicate with a host computer via infra-red, send faxes, even do trackside development, loaded with the ME10 designer software, which enables the creation of the 3-D images of 'virtual' cars which can be wind-tested, altered and continually enhanced.

Electronic cash at the Olympics

Visa International (Internet address: http://www.visa.com), a worldwide sponsor of the Olympic Games, has chosen the event to launch the largest trial of electronic cash in north America.

"We can test the technology and 'showcase' it to four million consumers visiting the event from around the world," explains Stephen Schapp, Visa's executive vice president for products and marketing.

Electronic cash uses a plastic smart card with an embedded microprocessor capable of executing transactions and storing balances. "VISA Cash" cards will be available in \$10, \$20, \$50 and \$100 denominations from First Union Corporation, NationsBank and Wachovia, the participating banks, where they can be also replenished. They can also be purchased from card-dispensing machines in banks, shopping centres and some merchants. VISA Cash will be accepted for purchase of food and beverages at the main stadium venues and the Olympic Village.

Milestone in the history of money

Visa chooses the Olympics to launch a large trial of its electronic cash systems

city area's fast food outlets, gasoline stations, convenience stores, cinemas and railway stations.

Users insert the card into a terminal which displays the balance, then the customer confirms the amount of the transaction by pressing a button and the cash is transferred. The new balance is then displayed. Electronic cash offers advantages in speed of transaction and the ease of carrying value. For businesses, it offers a dramatic reduction in the cost of handling cash, which is estimated at \$4.5bn a year in the UK alone.

The trial continues in Atlanta after the Olympic games. Other trials of VISA Cash are proceeding in Argentina, Canada, Columbia and Australia's Gold Coast. Spain is the closest to commencing a national roll-out of VISA Cash. The system complies with an international standard agreed

with MasterCard and Europay. A large-scale pilot of Mondex, NatWest's equivalent technology, has been running in Swindon and is due to be extended throughout the UK in 1997.

"This is a milestone in the history of money," says Schapp. "We have been using coins for thousands of years, but we now have the technology to replace it with electronic stored value. This trial is the first step towards implementation a relationship card, which will give users worldwide secure and portable access to a full range of financial and payment services."

"The microchip in the card will allow the user to carry out credit transactions, make debit payments, store value with electronic cash, provide the ability to carry out secure transactions on the Internet, provide electronic banking and allow users to replenish their electronic cash, he says.

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Network-centric computing

Prospects for network computers • By Louise Kehoe

The NC debate intensifies

Larry Ellison, chairman of Oracle, has touched a raw nerve in the personal computer industry with his charges that the ubiquitous desktop computers are too expensive and too complex to use

The era of the personal computer "is almost over and the era of the network computer is about to begin," says Larry Ellison, chairman and chief executive of Oracle and the chief promoter of the "NC," as he calls it.

Predicting the advent of a new information technology "megatrend", Mr Ellison has captured the attention of the computer and software industries as well as millions of computer users worldwide with his promise of \$500 computers.

When Mr Ellison began his NC campaign last year, prominent leaders of the PC industry scoffed. Bill Gates, chairman of Microsoft, called the NC "a stupid idea" that would "never happen". Michael Dell, Dell Computer chief executive, referred to it as a "back to the future" concept, implying that it turned back the clock to the days of centralised mainframe computer systems.

Over the past six months, however, Mr Ellison has wooed NC supporters from the software, consumer electronics and computer industries. Last month at an NC rally in San Francisco, more than 50 companies including Apple Computer, International Business Machines, Netscape Communications and Sun Microsystems endorsed NC standards.

At the heart of the debate over NCs - also known as net-

work appliances, thin clients or network terminals - are contrasting views of the future role of the Internet and private corporate "intranets".

While there is broad agreement that Internet standards, which enable computers of all sorts to communicate and share data, represent a sea-change in information technology, the industry is divided over what this will mean for individual computer users and how quickly change may occur.

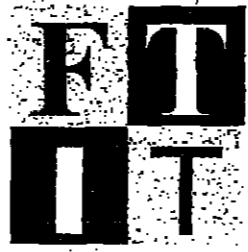
Competitive interests

Fueled by the debate are the competitive interests of some of the world's largest software and computer companies. There is nothing that Mr Ellison would like to see more than to have arch-rival Microsoft lose its grip on the personal computing software market.

Similarly, it is to the benefit of companies such as Netscape and Sun Microsystems - the largest providers of Internet software and servers - to promote the use of the Internet.

In contrast, Microsoft and companies such as Compaq Computer that have flourished in the PC market clearly have a vested interest in preserving the status quo.

Mr Ellison maintains that



Directions

Business strategies for the network-centric computing era



Ellison: champion of the network computer

the Internet and intranets are about to spawn a radical change that turns the concept of a PC on its head. Instead of putting computer power and numerous application programs on every desk, the NC minimises the desktop unit and relies heavily upon the power of network "servers" - larger computers that store data and software and service the needs of all users linked to a network.

In the corporate setting, the NC could be linked to an office local area network. For the computer at home, the NC would be hooked up to the Internet.

PCs are too expensive and complex, Mr Ellison maintains. With the NC, he says, "the complexity is moved out of the appliance and back into the

networks." He draws an analogy with television cable networks and telephone networks which are "enormously complex, but the devices that bring these services to individuals are inexpensive and easy to use".

He has demonstrated prototype NCs built for less than \$300 and he promises that NCs selling for only about \$500 will be widely available before the end of this year. While he does not see NCs replacing PCs, he predicts that NC sales will outstrip those of PCs by the end of the decade.

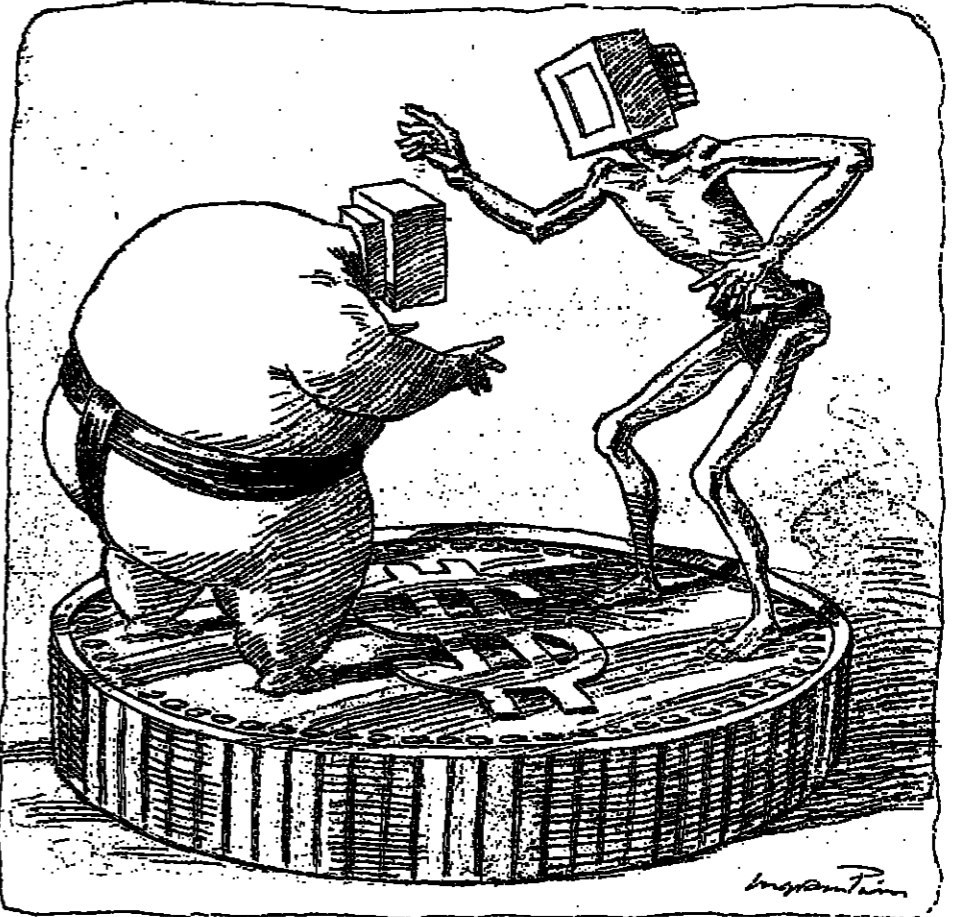
From Mr Gates perspective, however, the Internet and corporate networks are facilities that extend the capabilities of PCs, rather than displace them.

"Microsoft will embrace and

extend standards and technologies coming out of the Internet and provide great implementations for the PC and (Apple) Macintosh," he says.

Mr Gates argues, moreover, that NCs have two significant drawbacks. First, he points out, NCs will not run the plethora of PC software that is in use today. "The world has more than 150m users of Windows, and there are 5m people developing Windows software... Microsoft's strategy rewards, rather than discards, the investments these people and companies have made".

Secondly, he argues that NCs will require broadband networks in order to access programs and data stored on remote servers at an acceptable speed. "The machines may find a place in the corporate



The struggle to cut costs: new slim-line and easy-to-use "network computers" - also known as network appliances, thin clients or network terminals - will sharply reduce the "cost of ownership" of a desktop computer in the corporate arena, claim the NC's ardent supporters

marketplace, where intranets and broadband networks are fairly common," he concedes.

However, network terminals "will find less acceptance in homes, where narrowband and midband connections (such as ISDN and cable modems) to the Internet will be the rule for several years," Mr Gates says. Even some of the avowed

supporters of the NC agree in part with Mr Gates' assessment. IBM, for example, is focusing its initial NC efforts at the business marketplace, rather than consumers.

"We are absolutely certain there is a place for NCs in business. We suspect that the consumer market will develop more slowly," says Phil Hester, general manager of IBM's Inte-

grated Product Solutions group.

In the corporate arena, one of the main attractions of the NC will be that it sharply reduces the "cost of ownership" of a desktop computer, says Mr Hester. According to industry studies, PCs linked to office networks cost as much as \$12,000 a year to maintain, support and upgrade. NCs could cut this cost by 25 per cent or more, IBM believes.

Similarly, SunRiver the world's second largest manufacturer of computer terminals, aims to become a leading producer of NCs. But the company has "no interest in the consumer market," says Gerald Youngblood, chairman and chief executive. SunRiver will include a Windows NT-compatible version of the NC in its range of new products, says Mr Youngblood, because the company believes many businesses will want to keep using existing PC applications software.

Network computers in the corporate environment • By Rod Newing

Kick away those support costs

Network computers may offer corporate users a big cut in the cost of ownership compared with personal computers

According to research by the Gartner Group, the lifetime cost of ownership of a personal computer in the business environment can be as high as \$40,000.

IBM and Sun, two manufacturers who are working hard to produce network computers, are therefore targeting the ongoing cost of supporting a desktop computer over its lifetime to produce a competitive advantage over personal computers.

The network computer (NC) is designed to be as simple as possible, with no hard disk, CD-Rom or floppy disk drive. The essential components of a network computer are well proven and reliable, including processor, motherboard, memory, network card, monitor, keyboard and mouse.

However, the real cost-saving lies in the lack of local software. Sun's JavaStation has no operating system, downloading instead a Java "virtual machine", which is a compact piece of software code. A virtual machine can be written to support a device from any manufacturer. In the case of IBM, researchers are experimenting with several different operating systems, but they believe that users are not bothered about which system they have.

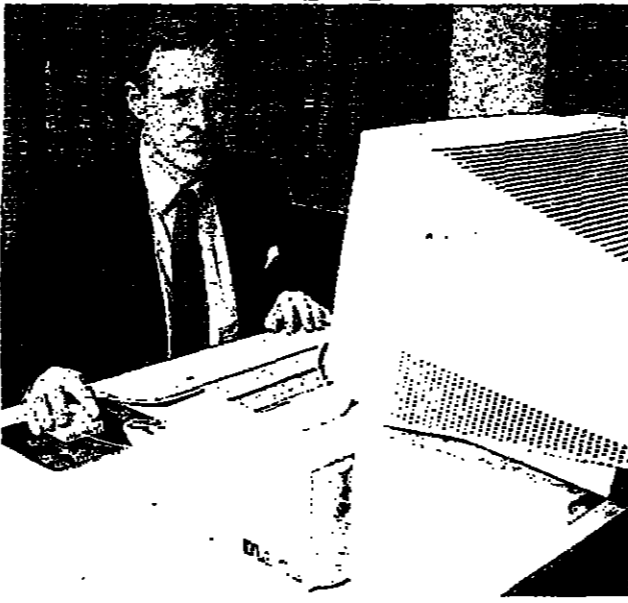
The user downloads a browser which allows them to connect to whatever software and data they need. This is likely to be a client for a

full-blown business application, which will have moved as much functionality back to the server as possible, leaving a "thin client". It could also connect to a front end to a legacy system.

The software is loaded into the memory by downloading from the network each time the device is used. This means that administrators can manage software distribution centrally and users will automatically have the latest version of the software. Because there is no floppy disk or CD-Rom drive, security and back-up is handled centrally by the network, further reducing support costs.

Sun are developing eight devices at present. The machine aimed at the corporate market is called the "JavaStation" and will be available later this year, although no firm date has been announced. The prototype shown to the press was fitted inside an external disc drive box, the size of a large novel, but was taking up about half the space inside.

The JavaStation will sell for \$750-1,500, including a monitor, against a typical PC at \$2,000. However, Sun are claiming "near zero" administration costs - "the JavaStation reduces support costs, provides more security, reduces the cost per seat and distributes applications automatically," says Martyn Lambert, the director



Rod Newing test-drives a prototype of the Sun JavaStation - the small box in the foreground - which is aimed at the corporate market

of Sun's new Networking Business Unit.

IBM has investigated 15 possible network computer devices and has narrowed its choices down to seven. These include at least two for use in a corporate environment. One of these is designed to reduce space on the desktop by incorporating the computer into the monitor casing. A number of prototypes of this design have already been sold to a leading corporate customer.

IBM are emphasising the ease of use of a network computer when compared with a PC - "IBM is in the information business, not the hardware business," says Ozlie Osborne, vice president of

transition," he believes.

Sun expects to sell about 300,000 units worldwide in 1997, all into the corporate sector. They will target the retail and healthcare markets, where JavaStations can provide small shops, dentists or doctors with access to central servers. They also expect the financial services sector to be attracted by the cost saving potential in their highly competitive sector. However, Sun has another reason for promoting the network computer, in that they want to double the number of servers they sell.

"The success of the network PC in a corporate environment is very much dependant on the design of software," says Trevor Salomon, marketing and business development manager at SAP (UK), who have already announced support for the Internet and Intranet with their R3 suite of business software.

"Vendors with fat clients are going to have problems, but those with thin clients will be able to provide tremendous advantages to the customer. We are still pioneering, but corporate users won't just buy network computers because they are cheap. They will want to be convinced that their applications will be reliable, secure and fast, as well," he says.

Network computers have tremendous potential, but their acceptance will depend entirely on user-reaction - "we don't know what the killer applications will be," says Mr Osborne, "but the network-centric model is flexible enough to accommodate it".

NC development • By Paul Taylor

Advent of the Acorn NetSurfer

The network computer has provided Acorn with a coherent strategy, based on the network concept, and raised the group's worldwide profile

Although the impetus for the development of network computers came from Mr Larry Ellison, chairman of Oracle, much of the design and development work has been undertaken in the UK by a handful of small technology companies including Cambridge-based Acorn Computer and Eidos, the video technology specialist.

Acorn, which won a contract in January from Oracle to design a family of network

computers, including desktop and portable models, plans to become one of the first companies to sell a network computer while Eidos has agreed to provide video compression technology for Oracle's own device, the Oracle Network Computer.

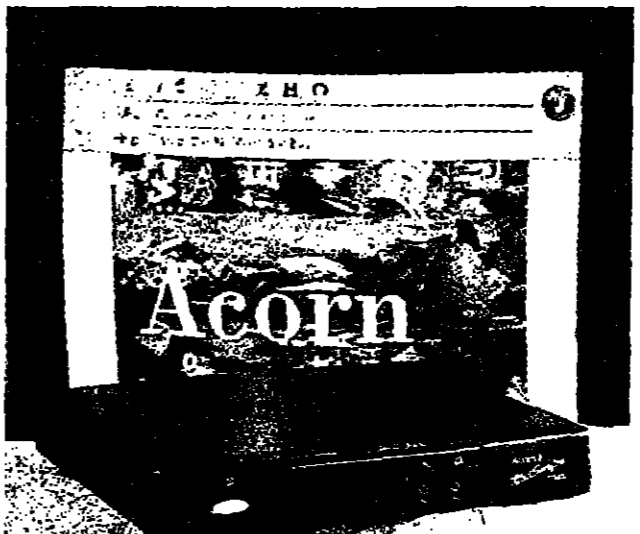
The Eidos' video compression technology, which will be made available to all NC developers, is expected to form part

Challenge for NC manufacturers

Most NCs, however, are expected to run applications written in Sun Microsystems' Java programming language and stored on network servers. A significant challenge for NC manufacturers, therefore, will be to encourage the development of Java application programs that mimic the functions and appearance of popular PC programs.

Supporters of the NC may be promising too much, too soon, industry analysts warn. It will take time for NC software to be developed for the business market, and still longer for high-bandwidth networks to reach consumers' homes in most parts of the world. Nonetheless, Mr Ellison has touched a raw nerve in the PC industry with his charges that the ubiquitous desktop computers are too expensive and too complex to use. Already, the threat of competition from NCs is spurring efforts to develop lower-cost and easier-to-use PCs.

Larry Ellison will be bringing a keynote address at this Friday's London symposium on the future of desktop computing; see details on page 10



Quick to market: Acorn Computer's Internet device, due out this autumn, is likely to cost less than \$500

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Network-centric computing

Guest column • Philip Crawford on the future of the Network Computer

Is this revenge on the nerds?

'The Network Computer represents the best chance of making computing available to everyone, both in the home and in business'

Does computer technology frighten you? Are you bewildered by the jargon and acronyms that seem to drop so easily from the lips of so-called 'techies'? Does the cost of personal computers (PCs) and the pace with which they constantly change, amaze you?

Even more importantly, do the life-cycle costs including software upgrades blow your mind?

The chances are that, for most people outside of the computer industry (and probably for a fair few people within it) the honest, and perhaps unpalatable, answer is yes.

But why do these fears exist? Surely computer technology is there to help us by making our lives easier, as well as making us far more productive and

efficient at our jobs?

Well, it *should* do, but the reality is that far too often it does not achieve this - and this is simply because, in my view, too many chief executives among computer manufacturers have forgotten what their users want from technology.

Brought up in the darkened room of the development lab, they are often in love with technology *per se* to such an extent that they simply want their users to feel the same sense of wonder and admiration. Well, wake up to the real world: not everyone has the same level of obsession!

Forgive me if I am wrong, but most PC users do not (and should not) care about how many lines of code went into their latest piece of software.

Instead, users want to be assured that they can set up and operate their PC without wading through manuals the size of an encyclopaedia. They also want their PC to be cheap to buy and cheap to run. However, for too many high-ranking computer executives, such thinking is anathema.

Where is the proof of this techno-fear? Consider the example of the humble video recorder. I remember when VCRs were first marketed as an affordable commodity item - enormously complex and resplendent with rows and rows of function buttons, they were touted as a high-tech 'must-have'.

But this was not what users wanted. Left befuddled by the sheer complexity of the machines, most owners had to admit, rather shamefacedly, that they did not have a clue how to operate their VCR.

What has been the result of this consumer reaction? VCR manufacturers have changed

tack dramatically and videos recorders have quickly appeared on the market with only the essential function buttons, such as play, record and stop.

With research demonstrating that the market for home purchases of PCs has slowed down dramatically and that many office users of PCs only use perhaps 10 per cent of the functionality of their machines, the argument that the PC is too difficult to use for many people is a strong one.

There is clearly a lesson here for the computer industry to learn: if it wants to make computing truly pervasive in society, then it has to follow the lead of the VCR manufacturers.

But is the computer industry ready for such a shift in attitude? Apart from the odd Luddite with a vested interest in preserving the status quo, I believe it is willing - and my evidence for this lies in the

industry's rapid acceptance of the Network Computer.

To briefly recap, if you have not already come across it, the Network Computer redefines what a computer should be: small, inexpensive, easy to use, and without the complexity and cost associated with today's PCs.

The concept behind the NC is that it is a device that is as easy to buy and set up as a telephone and which can perform simple tasks such as accessing the Internet, word processing, accessing spreadsheets and e-mail efficiently and cost effectively. And it is the concept that is important because inherent in the thinking behind the NC is the recognition that computing has to be both easy and cheap.

Cost is fundamentally important to the idea of the NC because, as well as the fact that PCs are too difficult to use, many consumers simply cannot afford to buy PCs which retail at an average cost of more than £1,000.

Costing around £300, the NC is priced at an acceptable commodity level and at a price point which will persuade consumers to jump on the computing bandwagon. It is not just consumers who win at the cost of today's PCs and who are ready for a cheaper alternative: boards of directors of many companies must tear their hair out at the cost of maintaining and growing their PC infrastructure.

A small number of sceptics in the computer industry have been quick to deride the idea of the Network Computer and have put barriers in the way of its take-up. Claims that communications infrastructures are not in place to support such a device are amongst the more common arguments against the NC.

However, such arguments are irrelevant because, as with any new technology, business and consumer demand will drive the market to come up with solutions to problems. In fact, the pace of growth in network bandwidth is significantly in excess of the pace of growth in chip technology.

When Alexander Graham Bell invented the telephone, I



Philip Crawford: 'The Network Computer redefines what a computer should be'

am sure many people suggested it could never be widely used because the communications infrastructure was not in place to support it. They were wrong then, just as NC critics are wrong now. Even so, the barriers to the NCs adoption have been greatly exaggerated. Solutions to issues, such as communication infrastructures, are not far away.

I firmly believe that, because it is so easy to use and so cheap to buy and maintain, the NC represents the best chance of making computing available to everyone; both in the home and in business. The irony is that, because the technical complexity behind the NC is effectively hidden from the user, many people will use one without even realising that they are using a computer.

In my view, this is exactly how technology should operate: hidden from our view, but making our lives easier. And the computer companies that succeed in the future will be the ones that recognise this simple fact, rather than the ones who continue to promote products based on their complexity and the millions of programming hours that went into developing them.

In short, revenge on the nerds may soon be at hand.

The writer, Philip Crawford, is managing director of Oracle UK and Ireland

The future of the personal computer

Big moves to make PCs more user-friendly

New-style PCs will be able to use a TV or computer monitor and control a wide range of consumer electronics devices, reports Tom Foremski

Future PCs will offer more of what they already offer: more memory, supercomputer performance in a match box, stunning displays, and they will respond marvellously to voice commands and hand-written input. Such predictions are easy to extrapolate from the current steep rate of progress in PC technology, but are not very useful.

Looking at the immediate future, one to two years ahead, it is possible to build a reasonably clear picture of the future PC and its uses. For example, by this time next year, the PC market will be more segmented with special PC systems for specific uses. The division between the home and business PCs will be much more pronounced. And the popularity of the Internet and corporate intranets, will give rise to a range of mobile and desktop PCs for Internet applications.

Boot-up time

Some of the new technologies that will appear in the PC of 1997, were discussed at the recent Windows Engineering Hardware conference at San Jose, California. These included technologies such as OnNow and ACPI which eliminates the long boot-up time for PCs and is part of the Microsoft and Intel sponsored Advanced Configuration and Power Interface (ACPI) technology that manages power use by all types of PCs, not just portable computers.

'Users are demanding that PCs become more convenient to access and use in the home and the office,' says Jim Allchin, senior vice president of the desktop and business systems division at Microsoft. 'They want their PC to be instantly available to answer the phone, display new e-mail,

browse the Internet or run an application. Consumers don't want devices that take a long time to warm up or that use unnecessary energy.'

OnNow and ACPI are part of Microsoft's efforts to make the PC much more consumer-friendly - and hopefully find new markets among a large number of potential customers who are not computer literate and need not be to use the new class of computers. Microsoft calls the future PC design, the Simply Interactive Personal Computer (SIPC).

SIPC-based systems will be able to use a TV or computer monitor, and will be able to control a wide range of consumer electronics devices such as TVs, VCRs, stereo systems, Digital Video Disk players, cable modems and heating and security systems. Speaking at the conference, Microsoft chairman Bill Gates said the goal is to create a PC appliance that is easy to turn on and use.

'We would like to make it as easy as just plugging in a disk to watch a movie, listen to music, even have the PC keep track of what your favourite movies are,' said Gates.

He added that the PC needs to be made much more user-friendly if it is to be accepted by all types of users in a wide variety of uses.

'You're not going to go to your PC to look up a new fact or find out about movies if you're sitting there watching that memory test-program run. I don't think there's anything as antiquated as that memory test that comes up or those kind of ugly BIOS messages that we all see. Those have just got to go away,' Gates said.

SIPC designs will lead to sealed case designs with no options for users to add mem-

Continued on next page

The Acorn NetSurfer

'The fourth wave of computing'

Continued from page 7

of the advanced video software architecture for the NC.

'With the Oracle licence in place, Eidocs is creating a platform-wide de facto industry standard for software-based videophones for use over the World Wide Web,' said Mr Stephen Streater of Eidocs.

Acorn has dubbed its own offering - due out this autumn - the Acorn NetSurfer. The machine, demonstrated in London for the first time a few weeks ago, is expected to be manufactured locally under contract and will cost less than \$500.

The group expects to sell the machines initially to corporate customers such as retailers and financial service companies and to the education market through its Xemplar Education joint venture with Apple Computer.

Acorn's management emphasise that they are able to bring the NetSurfer to market quickly by capitalising on the

semiconductor design work done by a sister company, Advanced BISC Machines, in which both Acorn and Apple Computer have 43 per cent stakes.

Arm has developed the low-cost, low power consumption microprocessors which have been used in the Apple Newton and in interactive TV devices - set-top boxes - such as those being used in the Cambridge trial where participants already have access to the World Wide Web through their TV sets.

Two of these microprocessors, the ARM7500FE and the new high performance SuperArm processor, developed jointly with Digital Equipment, are expected to power the first generation of NCs.

Interactive television set-top boxes share a number of similarities with the NC concept, for example both are designed to use an ordinary television as a primary display and include

special 'anti-twitcher' and 'anti-aliased' font display techniques to make text more readable on TV sets.

They are also both designed to be networked devices and do not depend on expensive local data storage devices which helps simplify the design.

'For years, Acorn has been focusing its efforts on making the benefits of computing technology more widely accessible,' said Mr Malcolm Bird, chief executive of Acorn's new network computing division.

'The whole industry has been slowly heading in this direction, and finally we are entering the fourth wave of computing. We have gone from the mainframe to the minicomputer to the PC and now the NC, with each wave costing less, being easier to use and offering access to more and more people.'

Aside from manufacturing the devices themselves Acorn, which has invested heavily in Risc architecture through ARM, and in broadband multimedia

through its Online Media subsidiary, should benefit in a number of ways from the advent of the new computing devices.

Mr David Lee, Acorn's chief executive, points out that the Oracle design contract has helped fund the group's 50-to-60 strong research team for a year. In addition, Acorn may be able to look forward to a portion of the \$10 to \$15 licence fee Oracle will receive for each NC built using its specification and should benefit indirectly from sales of ARM chips manufactured by licensees.

But perhaps just as important is the fact that the network computer has provided Acorn with a coherent strategy based on the network concept and raised the group's worldwide profile.

Acorn's home page on the World Wide Web is: <http://www.acorn.co.uk/>

IT stockwatch: focus on network-centric computing - see page 24

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If you do not wish to receive them, tick here Send to: Compaq Computer Limited, FREEPOST FT10 0L, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 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View from the top • Paul Taylor interviews David Garrison of Netcom

Radical changes in PC usage

The PC has moved from being a desktop island to become a communications tool, says David Garrison, chairman of Netcom, the leading US-based independent Internet service-provider. The Net, he argues, is the catalyst for a sociological revolution

On April 10, Netcom passed another milestone as its subscriber base moved through the 400,000 level. Since then, the company has established operations in the fast-growing UK market - the latest in a string of US service-providers to look to Britain for further growth.

For David Garrison, Netcom's chairman and chief executive, the events of the past two months cap a dramatic first year in the job, during which the group's revenues nearly quadrupled to \$33.4m and its subscriber base grew by more than 300 per cent.

"I think a couple of sea changes are occurring simultaneously which are leading us to a very fundamental change in the way people use computers and the way people will access content of all different

says Garrison, is information "content".

"The amount of content, and the rate at which it is being added to the Internet, surpasses any other content aggregation we have seen in history.

It is not just content in the hands of a few who have traditionally controlled content, but this is a very broad-based 'content revolution' where people can create their own home pages and participate in the creation of content.

"Much of this will not be of interest to the masses, but the fact is that in this enormous content almost every special need or interest group can be satisfied and it is truly allowing new kinds of communities to be created."

For example, he points out, "if you live in a town or a village in the countryside and you suffer from a rare disease, you are really disadvantaged because you have no access and your doctor probably doesn't have much 'exposure' to it. With the Internet you can not only connect with other people who suffer from the disease, you can do your own medical research online in order to have intelligent questions to ask of your doctor.

"Therefore what we have done is created a community of people that otherwise would have no bond - we have created communities of interest."

The Internet, he argues, is the catalyst for a sociological revolution.

The third significant change is the emergence of easy-to-use tools which bring together the content with the communications device. "The most obvious one is the browser, but there will be others as well. The browser in and of itself is

business users - "there are enormous opportunities for productivity improvement, using the Net," he suggests. For example, companies can use the Internet's search tools to undertake research on their partners, competitors or combine of doing it today."

However, just what form of tariff structure might appear remains unclear - "it could be you will pay a higher amount for priority service, it could also be that all people get a priority service but you will get a discount for slower service; it could be time of day, it's too early to tell. In this business, we can be certain that it will change."

Garrison also has strong views on regulation of the Internet: "We tend to agree with the view that the Internet is by definition an international product and no one country is in a position to control the content or the service, although we will certainly respect any nation's laws regarding the Internet - our system is designed so we can offer a different service in each country in which we operate - we want to be very sensitive and responsible and responsive to the laws."

"At the same time, we think it is about individual responsibility, we think it is about individual freedom and individual choice. We will offer tools such as 'Surf Watch' to our subscribers so they can screen-out certain types of content that they might find offensive for children, but I think you can find offensive content on the high street, too, if you know where to look."

"You can find offensive content in print, on satellite television and video tapes and you can find it on the Internet, but as a percentage of content I am told it's less than one percent, so it is not what the Internet is about; it happens to be a by-product of what is there."

He also acknowledges that the Internet faces other challenges as it evolves, not least ensuring that the infrastructure keeps pace with demand so that traffic does not slow to a crawl. Already, he notes that many people accessing the Internet through online services, experience service degradation because of network architectures and congested servers.

The other bottleneck tends to occur at the actual content owner's site, where they have not provided sufficient capacity, he says. "We have found that many times that is the

culprit - and that is not related to any one carrier, but it is related to the demand on a very 'hot' site. That problem will continue as we grow, just because of increased capacity, as more users come on, you have to increase your bandwidth capacity."

However, for Netcom corporate customers, Garrison says that security issues remain the main concern: "They want confidential information has been distributed through the Net, but by definition an open network such as Net is going to have security issues, just like the postal service the credit card system and other facilities."

He also acknowledges that by providing a gateway through to its internal systems, a company is opening itself up to fraud. But he adds: "In our experience most of the hackers tend to be well-educated, relatively affluent 'teens, acting out of boredom - and they hack for the challenge of it. Most of them don't have a criminal intent. It's much like saying in the early days of television or radio you had 'static' problems - it's part of the growth of the business."

Netcom's business customers also want to know how to build intranets and to connect up disparate corporate locations: "We have corporate customers who actually don't want to access the Internet, they just want to use our Intranet services," says Garrison.

But in the fast-moving Internet industry, Garrison says one fact is certain: "The Internet is defined by change. What it is today is not what it will be in two years' time."



David Garrison: "There are enormous opportunities for business users"

The increasing amount of information on the Internet surpasses any other content aggregation in history

uses of the Internet will co-exist.

"In our experience, our customers are 'mixed-use' professionals, nearly three-quarters of the customers in the US and Canada are customers that use the Net for both productivity and information," he says.

They use the Internet to learn about their competitors, to do research on new products and to learn about marketplaces. But they also use the Internet to do research on hobbies, to undertake research on holidays in order to get the best deal and to learn about products.

"It is not that we think that the Internet as a shopping medium is going to replace Sears," says Garrison, "I see it as an enabling tool for people to be much smarter shoppers."

In terms of revenues, Garrison sees the Internet continuing to be supported by a mixture of advertising and paid-for services - matching the model in other media. In the US, he points out, television viewers either pay by purchasing goods advertised on television, or by paying a subscription to a cable provider.

"In the US, the average household is spending over \$100 a month on television, but they are not writing a cheque for that, they are buying products that are advertised on TV or they are subscribing to cable television."

"I don't think people will sign onto the Net and pay a dollar or \$5 every time they want to access information; I don't think that is a reasonable thing because you don't know what it is you are paying for," he says.

Nevertheless, he does think that "tiered services" or "prior-

ity channels" for business traffic could emerge.

"I think we will see this over time," he says. "It largely depends on how complex the traffic gets and the rate of acceleration of video and audio, we are technically capable of doing it today."

However, just what form of tariff structure might appear remains unclear - "it could be you will pay a higher amount for priority service, it could also be that all people get a priority service but you will get a discount for slower service; it could be time of day, it's too early to tell. In this business, we can be certain that it will change."

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The Net may offer 'tiered services' for business

someone who can help them with security issues, who can recommend equipment and configurations suitable for their needs. They want to know: 'How do I monitor the number of people accessing my web site and how do I provide a high level of service?'"

Security, he adds, is a real issue, "but it's also grossly overblown... we are very sensitive to the matter and have a department that focuses on security topics and complaints. "Thankfully, we have not had a major problem where

Preview: InterForum 96



Sir Peter Bonfield, chief executive of BT, will deliver an opening keynote address at InterForum 96

This Friday, June 7, a European audience of directors and senior personnel from the IT-user community will hear an impressive line-up of speakers taking part in InterForum 96 in London when the theme will be "The future of the desktop - business strategies for the network-centric computing era".

Sir Peter Bonfield, chief executive of British Telecom and chairman of ICL, will deliver the opening keynote address.

The closing address at the televised event at the Queen Elizabeth II Conference Centre, Westminster, will be given by Mr Larry Ellison, chief executive and president of Oracle, the software company.

InterForum 96 marks the launch of an annual IT symposium by UniForum UK, in association with the Financial

London symposium on the future of desktop computing

Times. UniForum is a non-profit organisation with more than 1,200 members spanning the vendor, user and central government communities.

The one-day event will also address an international audience via the FT Television service which is available to TV stations worldwide.

Other speakers will include: Mr Irving Wladawsky-Berger, head of IBM's Internet division, Mr Philip White, chief executive and president of Informix Software, Mr Keith Todd, chief executive of ICL, Mr Javid Aziz, European vice-president of Silicon Graphics, Mr Gene Banman, general manager of Desktop Systems Group, Sun Microsystems; Pete Higgins, Microsoft's group vice president, applications and content; and Mr Peter Martin, editor of the international edition of the Financial Times.

For more details of the event, contact Mr Philip Flaxton, executive director, UniForum UK, 9-11 EBC House, Richmond Station Buildings, Kew Road, Richmond, Surrey TW9 2NA; tel (+44) 181 332 0446; faxback (+44) 181 332 0442.

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Future PCs Systems will offer high speed graphics and larger memories

Continued from previous page:

ory of add-on cards. Instead, upgrades will be made by connecting peripheral units. The first SIPC systems should appear in the second half of 1997.

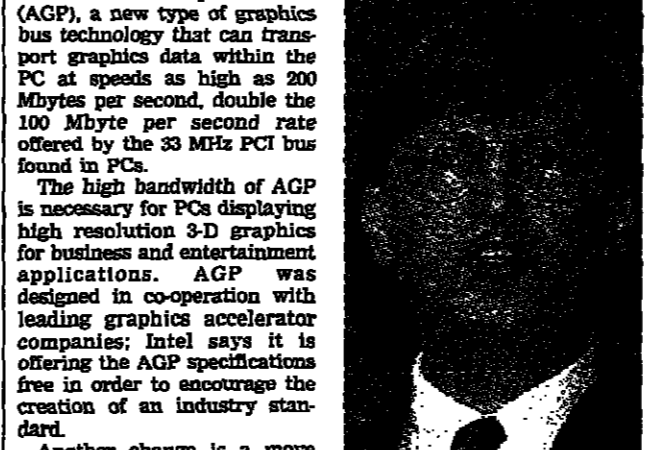
While SIPC is aimed mostly at changing the design of home computers, there are changes under way for business computers. Intel, for example, is proposing a new way of displaying three-dimensional graphic images that offers a much faster performance.

Intel calls its technology the Accelerated Graphics Port (AGP), a new type of graphics bus technology that can transport graphics data within the PC at speeds as high as 200 Mbytes per second, double the 100 Mbyte per second rate offered by the 33 MHz PCI bus found in PCs.

The high bandwidth of AGP is necessary for PCs displaying high resolution 3-D graphics for business and entertainment applications. AGP was designed in co-operation with leading graphics accelerator companies; Intel says it is offering the AGP specifications free in order to encourage the creation of an industry standard.

Another change is a move toward a Unified Memory Architecture (UMA). Instead of having separate memory chips to handle video graphics, there is a move to let the main system memory handle the video graphics. This arrangement could help cut the price of PCs, since memory chips are now being sold in larger packages, which means that to have a separate video memory in a PC, it would have to be larger and thus represent a larger cost of the system.

Other computers such as Apple Computer's Macintosh computers use UMA-type designs, but so far, Microsoft has been resisting UMA designs because it believes that system performance could drop by as much as 40 per cent when running Windows 95 on



Bill Gates, Microsoft chairman: "I don't think there's anything quite as antiquated as the PC memory test-program"

able to show Microsoft that an UMA system with 8MB of DRAM would probably only suffer a 10 per cent performance penalty.

Mark Kirstein, senior industry analyst at US market research firm In-Stat, says: "The majority of UMA systems this year will ship in European and other markets rather than North America."

Kirstein predicts that while UMA will get off to a relatively slow start this year, accounting for about 6 per cent of PC shipments, by 1998 UMA-based PCs could account for at least 50 per cent of the market.

CeBIT Home Electronics Fair New European show for consumer electronics

Seven hundred companies in the areas of personal computing, consumer electronics, media technology, telephony, software and online services will be exhibiting at the first-ever CeBIT Home Electronics Fair in Hannover from Wednesday, August 28 to Sunday, September 1, writes Michael Wilshire.

The five-day fair will be targeting distributors, resellers, purchasing co-operatives, small office/home office users and private consumers.

The event is timed to take advantage of the pre-Christmas ordering period for dealers at the end of August, allowing time for production in September and shipments in October and November.

Other events include a forum for retailers, display areas for IT users in schools and universities, presentations on the information society, digital video systems, computer graphics, high fidelity and surround sound, big screen TV, virtual reality, telebanking, home automation and a "Games City" with extensive hands-on facilities for visitors. In addition to themed displays, the fair will include modern and classical music concerts.

For more information: tel Hannover on (0511) 359-700; fax (0511) 359-700; Internet address: <http://www.messe.de>

The next issue of the FT-IT Review (Wednesday, July 3) will include themes on multimedia and education, with details of innovative products being launched at CeBIT Home in August.

For more details of the July issue, plus the fax-back service, see the information panel on page two of this Review.

The UK fax-back number is 0990 209 903; outside the UK the number is 41990 209 903.

Symposium

Alongside the fair will be an international symposium called "Learning for the Future", with demonstrations in a multimedia arena by suppliers of products and services, highlighting new ways of teaching, training and interactive learning with

Preview: Tech-Ed 96 in Nice Europe's largest technical conference

The future of the personal computer - as seen by the PC software company, Microsoft - will be the main theme for more than 3,000 expected attendees at the software company's European Tech-Ed 96 conference, which will take place in Nice, southern France, between Tuesday, June 11 and Friday, June 14.

The event at Acropolis Convention Centre will feature the largest range of Internet and Intranet developer technologies yet seen in Europe. There will also be previews of new software tools and products, including new versions of Visual Basic, Visual C++, Visual FoxPro and the Microsoft Office - all on show for the first time in Europe.

The event will also feature the company's Java development tool, code-named Jakarta, as well as the new ActiveX client and server framework. The four-day conference will feature 200 English-language technical sessions, with a dedicated stream of more than 30 key sessions delivered in French.

Details of the event are available in the UK on tel 0800-83445 or via Microsoft's home page at <http://www.microsoft.com/showcase/teched/>



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The Paris Pages: a very popular Web site for travelers who want illuminating information about the City of Lights. IBM provides hosting support for the site's 7,000-plus pages which feature descriptions of major monuments, museums and attractions, as well as the latest weather satellite images plus train, bus and Metro routes. All this, to-gather with access to details on shopping, 1,600 hotels, 600 restaurants, airports and exhaustive events calendars. Visit Paris on the Web at <http://www.paris.org/>

Copenhagen City Council is putting open government into action through the Internet. In the largest project of its kind in Europe, IBM has designed a solution that allows Copenhagen's citizens to access more than 2,000 pages of information via the Council's home page on the World Wide Web. Kiosks located in libraries and other public buildings provide access to information such as Council meeting minutes and agendas, thereby allowing citizens to review and democratically influence the decisions made by Council members.

Livia Insurance in Sweden markets its complex pension products in a way that is easy to understand. Customers fill in online forms to have their pensions automatically calculated and graphically displayed on the server home page. Livia is the first commercial insurance company to use such interactive techniques and has received widespread positive feedback from its customers. Livia's home page is at <http://www.livia.se>

Holiday Inn Worldwide and IBM are working together to refine and fully integrate the global hotel chain's newly acquired reservation and property management system. The system will provide Holiday Inn with a networked database linking the hotel's central reservation system with its property management system. The result will be a system that provides a single view of the chain's worldwide inventory of available rooms as well as customer profile information—thus improving the company's ability to maximize occupancy and deliver superior customer service. This initiative helps various segments of the worldwide travel industry improve efficiencies, reduce costs and increase the level of customer information in order to be better positioned for the future. IBM's Travel and Transportation Industry home page is <http://europe.ibm.com/travel>

Originally developed to help IBM's customers and employees communicate, share information and access worldwide databases, the IBM Global Network today serves 30,000 businesses and government agencies. IBM's network provides integrated data, voice and video services with access in 850 cities in more than 100 countries. The IBM Global Network is connected to the Internet and 35 other international networks, and manages thousands of local area networks.

GAZPROM, Russia's natural gas conglomerate and its Russian Natural Gas Research Institute, VNIIGAZ, form the leading scientific and technical hub of the gas industry in the former Soviet Union. Operating as the national information center for gas technologies VNIIGAZ is setting up a full online Internet system. The first such connection established in Russia, it is designed to provide access to state-of-the-art solutions, specialist networks, the latest international trends and key technology databases—all relating to the natural gas industry.

Cont'd. on Pg. II

Executive commentary: IBM's vision for the new age of the network

Dr. Irving Wladawsky-Berger, General Manager of the IBM Internet Division, talks about network computing and what it means to the customer



Dr. Irving Wladawsky-Berger

Q. Network computing seems to have emerged suddenly. Where did it come from and where do you see it going?

A. It's the logical next step in computing's evolution and is taking the traditional evolutionary path of previous technologies. The telephone, broadcasting, autos and planes all followed such a course.

The first stage is invention and limited use. Then the technology becomes more popular and finally, as it becomes more affordable it appeals to a mass market and becomes an integral part of their lives.

The computer is on the verge of being fully integrated into society, much in the way electricity is now. Today, nobody pays much attention to how electricity is generated and transmitted. We take it all for granted. In the not-very-distant future, information will simply be everywhere, as electricity is everywhere.

Q. How will access to information change the way we do business?

A. Many companies are integrating their internal operations, using Internet standards and Web browsers on private networks—or "intranets." The next logical

step is to expand this architecture using Internet technology to create an Extended Enterprise—with business data protected from unauthorized access by a "fire-wall."

This architecture provides a delivery system for transmitting content. These could be any number of constituencies: employees, trading partners, customers, shareholders, the press, security analysts, anyone a business chooses to communicate with.

In short, a business can extend its reach and add value all along the line.

Q. How is IBM working to bring the benefits of network computing to customers?

A. We're approaching the task from four directions simultaneously. First, our customers have amassed enormous volumes of information on their internal systems and we're working to open all that content and make it more accessible using the Internet. In line with that, we're enabling all our products to connect to the Internet.

Second, we're working aggressively to help the software development community create whole new classes of applications that will enable access and distribution of information, communication, collaboration and electronic

commerce.

Third, we're deploying a variety of subscription-based applications and services. These are solutions that customers can use to offer their content over IBM's Global Network thus avoiding the investment in systems and software. Users can access them from a browser and pay only for what they need.

And finally, like any company that's serious about the Internet, we're very deeply involved in research and advanced pilots.

Q. What does it take to connect a customer's own information to the World Wide Web? Is it a technological challenge?

A. It isn't so much a technological as it is an implementation issue.

The core technology already exists and we're creating the "glue" code that can be downloaded free to connect all our products to the Web. Database and transaction products like DB2 and CICS have already been enabled for the Web. And Lotus Notes, of course, already offers a

Cont'd. on Pg. III

Two powerful tools that work together: Lotus Notes and the Internet



When the Internet entered mainstream culture last year, many industry watchers predicted the beginning of the end for IBM/Lotus's flagship groupware product Lotus Notes. Notes is the software that allows computer users to access and share documents simultaneously—regardless of where they are or what platforms they're working on.

The demise was not to be. In a letter to shareholders earlier this year, IBM Chairman and CEO, Lou Gerstner, reported that more Notes installations were sold in the last half of 1995 than over the entire previous six-year life of the product.

What's more, the remarkable adoption of Internet standards appears to have propelled Notes into an enviable position as a technology ideally suited to exploit the global connectivity which the Internet represents.

While many industry watchers at first saw the potential for Internet technologies—particularly those that supported collaboration on the World Wide Web—as a threat to Lotus Notes by providing similar benefits at reduced cost, it has become increasingly clear that this is not the case.

Reliable Web sites on the Internet and so-called internally deployed intranets require sophisticated, integrated and scalable technologies that characterize the Notes server. In other words, as critical infrastructure, Web servers require the types of services that today are only found in a product such as Notes.

"The concern about the viability

of Notes in the face of the Internet phenomenon was really misplaced," said Steve Sayre, Lotus' vice president of marketing. "Serious interest in the Web has led the marketplace to a much deeper understanding of the value of technologies that support communication, collaboration and coordination. Lotus is clearly best positioned to benefit from this sea change in the market's technology orientation. We are the only vendor with a fully integrated platform that is at once optimized for messaging, groupware and Internet connectivity."

The sudden popularity of the Internet was driven largely by the broad acceptance of inexpensive and "lightweight" Web browsers, which—in the context of some applications—could be viewed as an alternative to the Notes client. However, the real battle for dominance in the Internet and Intranet will be for the server. Conventional wisdom has it that Lotus clearly offers the premier Web server solution in the industry today.

Notes' services—such as document management, replication, messaging and workflow engine, integration with other databases and systems management tools—definitively set it apart from relatively bare bones Web server alternatives. It is, in effect, *sui generis* in the marketplace.

Lotus CEO Mike Zisman puts the product into perspective this way: "Our challenge at Lotus is to take all the things that Notes does and expose them to Internet and Web protocols. In contrast, competitors have to take the standard protocols and figure out how to add all the function that Notes has. Whose job do you think is tougher?"

On balance, of course, those Web alternatives along with Microsoft's most recent entrant, Exchange Server, do present a legitimate challenge to Notes—and company officials take them seriously after seven years in the market without a direct competitor. They are said to be eager to win the market battle for once and for all.

Upon the shipment of Exchange, Jeff Papows, Lotus's executive vice president and COO, was quoted as saying: "I'm tired of shadow boxing." As the company entered 1995 it expected that Exchange would be its principal, and perhaps only, direct competitor. And indeed, the product's eventual release last month did sound the bell for a long-anticipated messaging system showdown.

However, Lotus Notes has so far won every comparative review over Exchange—on the basis of its unified solution for customers seeking a robust client/server messaging and groupware platform for building and distributing custom applications that provide integration with the Internet's World Wide Web.

So far, Lotus' one-stop solution is the one to beat. Jeff Papows, again: "The sales cycle for Notes used to include a lot of missionary work explaining the benefits of communication, collaboration and coordination. All this just in order to get prospects to examine

Notes on its technical merits." "But now," he continues, "almost everyone appreciates the value of shared resources and has moved on to figure out how best to leverage these resources. Companies clearly accept the role of Notes in a Web environment—and that means opportunities for us where they didn't exist before."

Clearly, the messaging/groupware/Internet "wars" are worth following—if nothing than for academic reasons—but it may be a while before there are any definitive winners other than Notes customers.

BULLETIN: Lotus has resolved to make the Internet its focal point and capture every bit of opportunity the world's most popular network generates. At the recent Internet World Conference, the company announced shipment of Lotus Notes: Newsstand, a complete solution for delivering business periodicals on the Web. Also previewed: Webmaster's Apprentice, a Lotus solution for creating and managing Web sites.

IBM expands horizons into mobile and wireless service

IBM recently announced a series of far-reaching service agreements with many of the world's foremost mobile and wireless computing providers.

Among those with whom IBM is now partnered are AT&T, Bell Atlantic NYNEX Mobile and GTE Mobilnet. IBM will become a preferred provider of mobile data services and solutions for the carriers.

According to industry observers, the pacts are further evidence of IBM's determination to enhance its leadership role in the emerging network computing marketplace.

In a related development, IBM also announced on the same date that it had entered into agreements with a number of leading makers of mobile computing products and applications.

The company will become a preferred services provider to a list of multinational firms that

includes Ericsson and Ractotek. Under terms of this deal, IBM will serve as a single source for product procurement, integration services and end-user support.

In a statement, James L. Seitz, general manager of IBM Availability Services, said: "Mobility is a fact of life among our customers, and within that framework they are increasingly aware of the benefits of network computing solutions."

Now we can assure them that wherever and whenever they go mobile, IBM will be there to support them."

Andrew Seybold, editor of *Outlook on Communications and Computing*, put the new developments into perspective. The industry has been stalled by complexity in putting the pieces and parts together. IBM's entry into the support infrastructure and its geographic coverage are the much-needed ingredients."

New study reveals trend to Internet computing among world companies

The Economist Intelligence Unit (EIU), in a recent study conducted with the IBM Consulting Group, reported that the convergence of telecommunications and information technology will significantly affect the way companies do much of their business in the years ahead.

"Global Telecommunications to the Year 2000: The Impact on Corporate IT Strategies," as the study was titled, comprises in-depth surveys of 120 companies in Europe, North America and Asia/Pacific supplemented by comprehensive interviews with CIOs and IT managers.

Overall, the study concluded that many companies will look to LAN/WAN technology to link their voice and data networks worldwide—and that they will fulfill more and more of their computing needs through vendors' networks.

The study notes: "The use of the Internet, perhaps today's best example of integrated telecommunications and IT technology, will grow in use from about 66 percent of companies surveyed to over 90 percent."

The convergence of telecommunications and IT technologies is a widely recognized need, according to respondents, but business has yet to fully integrate either the management or planning of the two disciplines. However, the report found that in the next five years more than four-fifths of companies will be fully integrated.

Telecommunications is increasing in importance in virtually all companies, as demonstrated by the rapid growth of voice and data traffic expected in the next five years, the EIU study said. Voice traffic is expected to grow by 20 percent in that period, while internal and external data traffic should increase by 56 and 49 percent respectively.

"Clearly, business can no longer ignore the convergence of telecommunications and IT. The study shows that many companies are starting to look for some of the benefits that network computing will deliver," said Joseph F. Movisso, General Manager of the IBM Consulting Group.

He further commented: "Fifty-two percent of the companies predict that within five years they will use the networks of various service providers for their internal IT needs, a very surprising intra-enterprise focus."

According to the study, distributed computing is expected to grow rapidly over the next five years—from the current 60% of companies using some form of local area or wide area network to 97 percent.

In close conjunction with the carriers and manufacturers, IBM will move forward in a number of directions.

● Marketing integrated end-to-end mobile solutions from planning to implementation.

● Providing wireline to wireless interconnecting solutions via the IBM Global Network.

● Internet access solutions and on-line electronic services.

● Supporting a customer's contract-based cellular requirements.

● Offering customers a single source of multivendor products and support services - more than 300 hardware and 700 software solutions that embrace desktop, network, laptop, handheld, modem and wireless technologies.

...

Special IBM Supplement - Network Computing

MARKET REP Bid

By Steve Thom
UK Stock Mark

A much more evident in London the close year of the potential rate activity, counter-move by BBA, but other rumour especially in the sector.

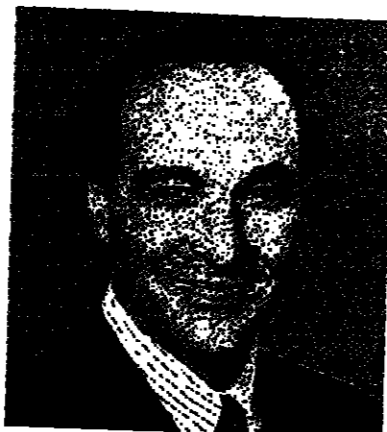
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Ten "myths" about the trend to network computing

As with all new concepts, network computing is frequently misunderstood, more than a little overhyped, and often difficult to fit into everyday reality. That said, this powerful new computing paradigm stands ready to transform businesses of every kind—all across the world.



What's real about it? What's fiction? What lies in between? In this article, Stephen G. Solazzo (Vice President, Client/Server Computing, IBM Europe Middle East Africa) explores the issues of network computing.

Myth 1: everyone's doing it. Not by a long shot; the fact is that many organisations are just getting started. But comforting as that fact may seem, there probably isn't a company of any signif-

icance on the planet that isn't thinking about piloting some network applications that could change the very nature of the way they do business.

Moral: now is the time to start the learning process. Nicholas

Negroponte, of the MIT Media Lab, puts it this way: "The Internet may be the only technology development in history in which the reality exceeds the hype."

Myth 2: Network computing is difficult to get into.

The famous saying, coined by Nike, says it all: "Just Do It." What we mean is that companies can readily make the transition into network computing with the help of experts in organisations like IBM or in the consulting or academic fields.

To be sure, training is needed on many of today's newest tools. But simple applications such as those for developing a Web site aren't beyond the competence of most companies. And they can open amazing vistas—with more than just traditional text and data, but

also high-quality graphics, video and animations.

Myth 3: Network computing is easy.

What's going on here? Well, the fact is, like Myth #2, this one is both partially correct and partially false. Sure it's relatively simple to create a home page; but, face it, it may well turn out to be a bad home page. The point is new skills are needed to move into the new world of network computing.

There are serious issues to face. How much corporate information to put up; and of what kind? Security issues. Choices among many development applications. Customer relations. How to provide facilities for making sales over the Internet? How to handle and administer the volume of "hits"?

For starters, IBM can help businesses work through all these issues. And more.

Myth 4: The Internet is useful only for communications applications.

Fact—many new applications

have capabilities that go far beyond that of simply enabling a "dialogue" across the Internet.

They have far-reaching business implications in such areas as direct marketing, customising product design, linking suppliers and manufacturers in real time, managing distribution channels, enabling personnel via wireless or mobile phones—and in providing on-demand information delivery.

Myth 5: It's the road to success.

Sorry, but many implementations of Web sites have not panned out because they weren't integrated into other corporate activities such as marketing.

The trick is focusing the whole company around the effort. Making sure every promotional item, every item of stationery, carries the home-page address. Making sure that content is updated and accurate. Making sure that hits are analysed and assembled into databases that are put to use.

Remember, an unsatisfactory

Cont'd. on Pg. IV

News Briefs (Cont'd. from Pg. I)

UNESCO and IBM have launched an effort to put the international organization's vast store of educational information on the Internet. Among other things, the project will deliver online reports to educators on global events and initiatives, create an electronic forum for decision makers in government and other organizations, give researchers interactive access to statistics and promote teaching techniques and development opportunities to educational institutions, particularly in developing countries. More than 200 megabytes of data drawn from a quarter-century of educational experience in more than 180 countries is now available at <http://www.education.unesco.org>

"The implications of network computing go on and on. It will transform every business, organization and institution in the world. Customers will have infinitely more choice in a networked world."

— Lou Gerstner

Exploration and Production (E&P) professionals in the worldwide oil industry make critical business and technical decisions based on the analysis and interpretation of a wide variety of information. Although large amounts of potentially valuable data are available, time constraints often mean that only readily accessible data are evaluated while other significant information might be overlooked. IBM has developed a solution for the worldwide oil industry called PetroBank, designed to provide E&P professionals with access to a shared online data bank. A user-friendly interface called PetroConnect assures easy access to this information via the Internet.

Bayer AG is working with IBM on a new Health Care Management project. Through the use of "smart" health-cards, patients will be able to access a network containing their personal medical records as well as worldwide databases containing information relevant to their particular needs. This solution will also enable physicians to access, over the Web, information on the latest scientific and pharmaceutical research. Material from online medical publications, libraries, teaching hospitals and research facilities will also be accessible to healthcare professionals.

MasterCard and Visa have agreed to support one of IBM's most innovative new applications: Cryptolopes. This easily implemented solution assures total and fail-safe security in financial transactions and other communications across the Internet. Cryptolopes may well become a big hit because security is what will make business move on the Internet.

Reuters NewMedia and a large group of other leading news and information providers now distribute "mission-critical" content through IBM's newly launched InfoSage online Internet subscription service. Using advanced profiling and search/retrieval technologies, InfoSage brings important benefits to business users who need convenient daily updates on a selected menu of subjects in which they have particular interest. Subscribers can receive as many as 30 stories twice daily.

UPS and Federal Express Corp. Overnight delivery companies no longer compete solely on the basis of vehicle fleets, routes or employee performance—but also, and more importantly, by making knowledge instantly available to the customer. UPS and FedEx are opening up their internal databases and putting them on the Internet so customers can personally track their own package movements around the world—24 hours a day, seven days a week, at the click of a mouse. The underlying principle behind this story: in the Internet age, customer satisfaction can often be found within the very fabric of corporate operations.

"Wouldn't it
be nice if the
wondrous,
futuristic,

virtual

world of the
Internet was
just a little less,
well, virtual?"

UPDATE

Something magical is happening to our planet. It's getting smaller. Every day, more people and more information are making the Internet a place of incredible opportunity and transformation.

Suddenly, people just like you have access to potential customers, business contacts, partners and competitors in every corner of the planet.

How can you make the most of this opportunity? Well, we'd like to help.

We have all of the minds and resources of IBM focused on the emerging world of networked computing. Over the next few months, we're going to discuss strategies and technologies to help you get from here to there. Let's start by talking about what's going on across the planet.

Electronic commerce is becoming a reality thanks to improved security and encryption technology like our innovative Cryptolopes which ensure that messages are read only by the people you want reading them.

Cybermall are springing up everywhere, letting companies sell their wares to millions of customers on line, without costly premises. Instead of gathering dust

in a warehouse, products are made and shipped to order.

And what's more, the more enterprise data you can bring on line, the wider you can cast your net.

The managed IBM Global Network is helping companies connect. Enterprises are expanding to give customers and suppliers piping hot information on prices, inventory and delivery schedules. Making them more efficient and honing their competitive edge.

All thanks to one of the world's largest managed data networks with managed access from Rio to Reykjavik and 848 other cities worldwide.

By using Lotus Notes over the Internet, people in remote locations can work on the same project simultaneously, expanding their reach even further. If you are eager to take advantage of the Internet, you don't need to be a millionaire. Or a genius.

You just need to drop by www.ibm.com for further information highlighting how IBM can help your business thrive in a networked world.

This is just beginning. We have a lot more to share with you. Just remember: it's a small planet. And it's yours.

Solutions for a small planet



Special IBM Supplement - Network Computing

News Briefs
Ed. from Pg. 1)

The home page is not an end in itself, just a beginning

While the Internet can no longer be seen as a fad, initial enthusiasm on the part of consumers for exploring its rich sources of information and service could indeed wane. John Patrick, IBM's Vice President for Internet Technology sounded this note of warning even as interest in the Internet was at an all-time high—fueled by events and exhibits at Hannover's CeBIT fair, Europe's largest IT event.

Patrick's viewpoint, paradoxical as it may seem, is based on a serious concern that businesses could ignore the full interactive potential of their home pages and thus fail to draw sufficient levels of consumer interest to justify the whole process of developing and maintaining Internet connectivity. Above all, he believes, this is a crucial time for companies to actively exploit the Internet's unique qualities—as opposed to simply posting home pages.



John R. Patrick, VP Internet Technology

The dilemma, as John Patrick sees it, is this: many companies could be missing the whole point of the Internet as a corporate tool by regarding the home page as the end of their efforts rather than the opening lines in a chapter of opportunities. "I am disturbed," he says, "at the notion that once a company puts up a home page that's all there is to it. I can almost hear them saying 'the door is open, now let's get back to work.'"

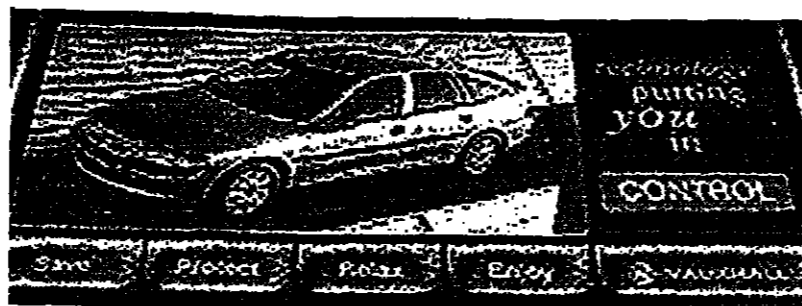
Apparently, many users are failing to look at the home page as a place for new ideas and innovative presentation. To be successful, companies must abandon the notion of simply digitizing the corporate brochure—and instead adopt a completely new production ethos. "The static home page is dead," says Patrick. What really counts, in his view, "is a live web site that sits up and does something."

"It's not all that difficult to accomplish," he continues. "All the tools are in place to bring off this transformation with relative ease. There's nothing mysterious about building a site that creates relationships...that exploits the potential of multimedia by making it rewarding to explore."

On the other hand, with all the competition out there on the Internet, it's not just smooth sailing. Developing and maintaining a successful Web site can be costly—but so are full-color corporate brochures and catalogues. And while such pieces might be thrown away at any time, a Web site is potentially forever. An ongoing effort that continues over time to attract interest, respond to inquiries and open the enterprise to outside interest of huge proportions.

And that's the real key: unlocking company resources, and deploying years of accumulated information, to reach a new worldwide constituency that includes everyone from shoppers to shareholders to suppliers to multinational organizations.

"The technology and the interfaces exist," concludes John Patrick, "to selectively move the data that's often trapped in back-office systems—and get it onto the Web where it can connect, in real time, with real people." But in doing this, the fundamental principal to bear in mind is that the home page is only the first step.



Vauxhall: on the highway to the Internet millennium

Vauxhall has become the first UK auto manufacturer to launch a fully integrated and interactive Web site for advertising and marketing on the Internet.

The site features innovative layouts and graphics that offer users the opportunity of getting everything from pricing to safety and comfort features to dealer locations.

Alisdair Luxmoore, Brand Communications Manager at Vauxhall, comments: "In our view, the project has had a very subtle and important benefit; the fact that it represents Vauxhall's use of highly advanced technology reinforces the image among buyers that Vauxhall cars themselves are the epitome of high-tech excellence. The medium is the message: it says that these are 21st century vehicles."

Vauxhall's Web project has been just one element in a campaign to launch the Vectra model. In addition, IBM has created the means to advertise the brand via interactive kiosks, CD-ROM and interactive television.

Reach is everything in the Vauxhall campaign: getting the story out with an extraordinary breadth and depth of detail that goes far beyond the confines of traditional media.

A corporate Web site can make information not only attractive, but also highly accessible. The Vauxhall site's interactive menus allow customers to absorb sales features in any order they choose, and in any amount.

Observers note that there's a rather persuasive immediacy to

the whole thing. It's as simple, for example, to locate your nearest dealer as it is to scroll through the available colors for different Vauxhall car models.

Luxmoore again: The response has been excellent. From the public, the press, industry experts and Internet users themselves. And most importantly, we're zeroing in on the right car-buying audiences. Over a million hits in the first four months, which is equivalent to 50,000 viewers on the Internet alone.

We can measure which pages are looked at most, and when. We get feedback on which information is most popular—and it's fast and accurate."

IBM was involved in every aspect of the project: creating the Web site and its graphics, supplying dealer hardware and maintaining and updating the content. Vauxhall notes that IBM was the only company that showed competence in all the disciplines.

The challenge in developing real time marketing information is drawing attention to the site and holding it. One example: IBM fed live results of a rally to grab rallying enthusiasts. And still another boon for browsers: current road traffic information on the Vauxhall site—updated every 43 seconds and combined with useful maps and graphics.

Steve Byrne of the IBM Interactive Media Centre: "We can respond to a marketing need and provide a comprehensive creative/technical strategy for all-electronic channels."

A secure market for copyrighted material

There is general agreement that the Internet offers great potential as a marketplace for the sale and purchase of a wide range of copyright-protected material.

But moving forward to fulfill this goal, which would greatly enhance the quality and variety of Internet content, has raised a number of serious issues.

- How to find and retrieve what users are looking for;

more effective business tool, IBM has formed relationships with a number of leading technology and information providers.

Thus, the technology is in place to facilitate the search, retrieval and purchase of content—including still images, text, sound and video—from distributed databases in a wide variety of formats hosted on a number of popular publishing platforms.

An example of how InfoMarket works. A user enters a query "XYZ Corp." on the InfoMarket search page, accessing all available data resources. In turn, he receives a relevance-ranked list of results, which may include a link to XYZ's Web site, credit and financial reports, news arti-



- How to protect intellectual property from illegal use once it is placed on the Internet;
- How to assure that content owners are paid for the use of their works, even as they are redistributed to others.

IBM InfoMarket is a new network-based service which comprehensively addresses these problems. It provides the Internet's only capability for simultaneously searching the Web, Usenet newsgroups and private commercial content with a single query.

The service makes use of cryptolope technology, secure electronic envelopes invented by IBM, to enable publishers to sell copyright-protected information on the Internet—quickly, easily and safely. And it provides both access and purchase mechanisms for those who wish to access the material.

In developing this revolutionary service to make the Internet a

cles and consumer comments in newsgroup postings. Content selections are accessed—some will be free, and others will be in a Cryptolope requiring payment to view.

Pricing and usage permissions are explained in an abstract on the outside of the Cryptolope. InfoMarket processes payments and provides rights management services to the publisher. Customers are billed monthly for their purchases.

On the seller's side, InfoMarket is developing special Plug-N-Publish toolkits to allow publishers to customize the "look and feel" of how their content is presented. In addition, InfoMarket will support the ability to pay consumers who choose to read certain advertisements... allow direct marketers to reach highly targeted audiences...and even offer coupons and tiered pricing to volume users of the new service.

EXECUTIVE COMMENTARY

(Cont'd. from Pg. 1)

mature environment for sharing information over the Web.

Naturally, network services are indispensable, and the IBM Global Network is the largest voice and data network in the world. We'll either run the customer's applications on our network, build one for them, or operate the customer's existing system.

Q. You mentioned electronic commerce before. What kind of future do you see for it?

A. Unquestionably all the pieces are coming together. In fact, 1995 was a year of breakthroughs for electronic commerce. Two principal security protocols, S-HTTP and SSL, became interoperable. Banks and financial services companies embraced the Web. MasterCard and Visa agreed on an approach for secure credit card and transactions over the Internet.

In fact, at Internet World, we introduced Net.Commerce, a service that enables merchants to do business securely over the Internet.

In the near future, online marketing catalogues should have considerable potential, first in the business-to-business arena and then on a broader, consumer scale.

Electronic publishing will provide a radically new channel for journals and magazines. This isn't just a matter of making retrospective material available electronically—but of taking advantage of

rich new capabilities to create something fresh and compelling.

Again, at Internet World, we introduced Lotus Newsstand, a complete set of tools for distributing subscription-based publications over the Web.

Q. How long before we see companies and institutions actually using network computing for their day-to-day business activities?

A. Actually this is happening today. The 22 hospitals of the Greater Dayton [Ohio] Hospital Association, for instance, use the IBM Global Network to communicate with some 2,500 physicians in their coverage area. They transmit clinical information and patient records—making for more efficient, lower-cost medical care.

The same principles can be applied with equal value in other industries like manufacturing, distribution, media and finance.

Q. Can you give us some idea of what IBM is doing on the research front?

A. There are a number of very exciting developments in digital video. We held a live, interactive press conference over the Internet, for example, transmitting a digital video signal that could be received by anyone in the world with sufficient bandwidth. Digital libraries are another fas-

inating effort. We're helping the Vatican Library and others digitize material in their unique collections in order to share it with the world.

Our Research Division is also investigating everything from remote access and mobility to electronic cash and systems management. And one thing we've learned in our long history is that preserving vital business data—maintaining personal privacy and guaranteeing the rights of content owners—is absolutely critical.

Q. What would you say IBM brings to a customer who's interested in exploiting the Internet?

A. Well, the real key to exploiting the Internet is taking all the technology that's been developed—especially software—integrating it with services, and applying a real knowledge of the customer's business to produce applications solutions. We have the resources to do that for any customer, large or small. We have the most scalable, reliable technology, the trained service personnel, the network experience and expertise, and the business partners to make it happen.

A quarter century ago, IBM had an advertising slogan: "The way we put things together sets us apart." It seems that we're back to the future.

Behind the Internet: a new generation of Servers

Just two years ago, mainframes were virtually written off as a casualty of the move toward a decentralized form of computing known as "client/server."

Mainframes were not only seen as being expensive, but also unable to compete with a wide array of alternative technologies that were then flooding the world market.

As it transpires, however, many companies now realize that the much-heralded benefits of client/server computing have been overshadowed by the complexity and cost of supporting disparate information systems.

Today, businesses are searching for a better, more efficient way to gain competitive advantages—by going a step beyond client/server. That step is to Network Computing, where they can connect directly with their customers, employees, suppliers and many other constituencies in a manner that transcends both time and distance.

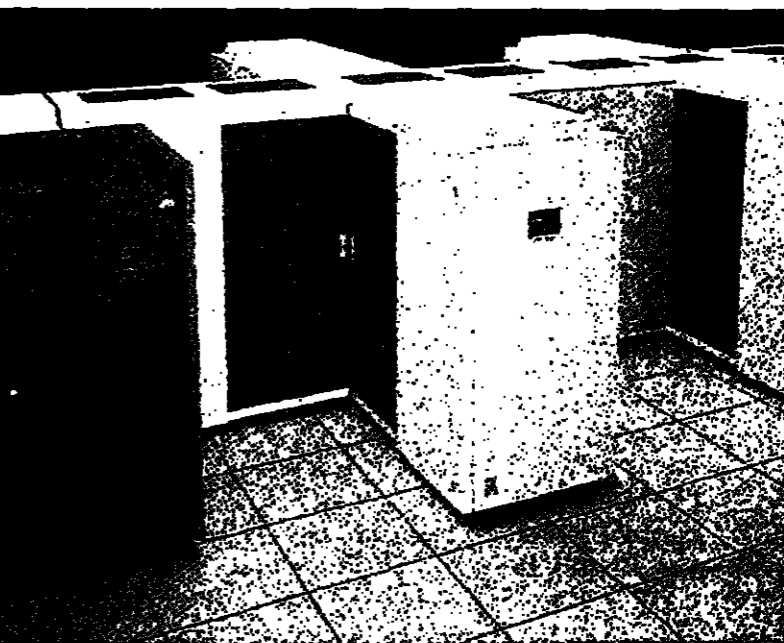
To enter the realm of Network Computing many companies are turning to a new generation of mainframes—large servers—which help them unlock valuable data stored in the firm's "glass house" and make it available to the outside world.

For Buell Duncan, general manager for product marketing at IBM's Paris headquarters, the move to more powerful and open servers has been an inevitable consequence of the increasing emphasis on information access and distribution.

"Today, much of the data in the corporate world is stored on large systems because they offer scalability, reliability and security at the lowest total cost—24 hours a day, seven days a week," said Duncan.

"These attributes become even more important as corporations seek to take advantage of the Internet and Intranets."

Major companies are already adopting the new server technology to cope with the demands of managing vast amounts of data. At the recent Internet World con-



IBM's S/390 Parallel Enterprise Server (left) is used at the heart of the client/server network at the 1996 Olympic Games

ference in San Jose, Calif., executives from American Airlines and Holiday Inn showcased industry-leading solutions developed by IBM that help them use the Internet to better serve their customers.

John Samuel, managing director of distribution planning at American Airlines, commented: "What makes the combination of [IBM's] S/390 and Internet technologies so exciting for American Airlines is that it provides us with the opportunity to establish an even better communications channel with our best customers—while at the same time reducing costs."

To support Holiday Inn's consumer Internet service, Holidex, which allows travelers to make reservations via the Internet, extra strength was needed. "We must have reliability, high availability and exceptionally fast transactions rates to support Holidex," said Dennis Erskine, vice president for systems and applications development. "Our System/390 provides all that and more."

In addition to developing more powerful yet cost-effective server hardware platforms, IBM has created a wide range of software servers that provide companies with complete, secure business solutions. When *The New York Times* wanted to offer its readers a

competitive, on-line search tool—an electronic version of the newspaper's classified ad section—it chose IBM's DB2 database server and web server to do the job.

"What's happening here is that companies are no longer using mainframes as traditional, hierarchical processors of information," says Duncan. "They're literally turning them inside out to give their customers new products and services."

From multimedia encyclopedias and online reference libraries to information on corporate Internet and Intranet sites—the large server is an ideal platform for storing and managing vast amounts of data in a reliable and cost-effective way.

And the large server is totally secure, a major consideration for companies interested in moving their commercial transactions onto the Internet.

Today's IBM's S/390 supports OS/390, a network-ready, open, integrated large-server operating system that runs both MVS and UNIX applications.

Special IBM Supplement - Network Computing

Network computing is creating the new era of Extended Enterprise

Christian Thomassen, Vice President, Network Computing, IBM Europe/Middle East/Africa, examines the dimensions of a rapidly developing trend in world business

Quite often, one hears that Internet technology is transforming business organizations into "virtual corporations."

Unfortunately, the term is misleading since it suggests that some ethereal cyberspace experience is going to replace the reality of productive, value-enhancing, day-to-day work.

What has evolved, as Internet computing gathers momentum, is a phenomenon that's more correctly described as the Extended Enterprise. Let me put this in perspective with a bit of historical background.

As technology has evolved, we've seen great changes in computing over the past three decades. First there was the centralized model of computing with mainframes and large central processors.

Then came the decentralised, or democratised, phase—the PC revolution which put a lot of the power in the hands of end users.

Now, we've evolved to the point where the computing power of the enterprise is linked—with mainframes and servers and PCs—in a cohesive network

The Internet has arrived, and it is fast becoming the very fabric of modern corporate life. Why? Because it makes huge amounts of useful, timely, pertinent and productive information available to everyone, everywhere, at any time.

What a revolution this evolution has produced. The Extended Enterprise is made up of employees with new levels of empowerment that add value to their work—communicating through a variety of devices that link them to the company's factories, suppliers, customers, prospects, shareholders, vendors, consultants, retailers, and wholesalers.

What does today's Extended Enterprise look like from the inside?

Typically, you might see that traditional departmental structures, with their rigid walls of demarcation, are giving way to quick, efficient network-based collaboration among people in various company locations.

This allows a wide range of different and highly targeted skills to be brought to bear on particular situations—with results that are

not only productive for the company but also especially gratifying for the participants. (The "skunkworks" concept, as an American colleague told me, is very much alive and well.)

Other examples of improved collaborative effort abound in the Extended Enterprise.

Under the new Internet paradigm, sales personnel can be out in the field—where they should be—and still, in effect, be part of the headquarters group. Also, suppliers and vendors can effectively be brought into the corporate loop on a regular basis. And customers, too.

And no longer do companies have to spend excessively to bring in respondents from outside to conduct on-going product and marketing research. Instead it can be done over the Internet. In minutes.

And consider the far-reaching implications of this revolution on a company's ability to cut back on the expansion of office space and related facilities—utilizing that money, instead, for plant and laboratory enhancements.

But at its heart, the Extended Enterprise is all about creating possibilities for the workforce. Those who choose to work at home some of the time can do so. Others can choose to work in off-site "clusters" with a just a few fellow workers. And, through access to the Web, employees' sources of learning, training and work-enhancement are vastly



multiplied.

Not to mention their ability to conduct research around the globe. And to chat with their associates and colleagues in other firms, universities and on the plant floor. Openness is everything; and it's here today.

We're looking at a whole new way of enhancing morale and of building employee confidence and commitment. Upward mobility isn't just a hope in the Internet age; it's an attainable reality.

And consider this as well. Both intra-company connectivity and communications between a company and its many constituencies is being further driven by relentless advances in mobile and wireless technology. And by digital video, video libraries and through teleconferencing.

If all this doesn't add value for the Extended Enterprise—in all aspects of its business—then I'm sadly mistaken.

There's something else going

on here that's particularly worthy of mentioning. To be sure, both large and medium-sized firms embrace Internet computing for all the right reasons. But uniquely, the new paradigm of corporate life may well have its greatest impact within the huge universe of small and entrepreneurial firms which must, perforce, get every ounce of productivity from workforces of limited size.

Internet computing can extend the "reach" and information-access of everyone within such firms—by orders of magnitude. And that's what makes the small guys into giants—even on the body competitive world stage.

The Extended Enterprise came into being through Internet computing. It serves as a model for those who wish to revitalize a corporate culture. It is universal and its economic benefits are demonstrable. Why? Because knowledge is power.

IBM and the 1996 Olympic Games: an overview

The task of staging the most technologically advanced sporting event in history, the 1996 Centennial Olympic Games, is nothing short of colossal. Set to commence in Atlanta in just six weeks, the event is said to be the equivalent of holding two Superbowls (the American professional football championship) each day—over a period of seventeen consecutive days. Arguably, it is the largest combined event, of any kind, ever held on American soil.

Logistical challenges abound, and are as heroic in their dimensions as the feats of the Olympic Games athletes themselves. Nothing must go wrong in presenting—and reporting—a series of competitions that captures the imagination of a vast worldwide audience. Not only are the Olympic Games a sporting festival, they are a celebration of human achievement and progress.

As the Olympic Games official information technology sponsor, IBM plays a pivotal role by providing technology, services, expertise and personnel to help the Atlanta Committee for the Olympic Games (ACOG) set up, organize and run the 26th Olympiad. In partnership with the ACOG, IBM has developed a range of solutions that address logistical challenges ranging from day-to-day administration to establishing and maintaining the Olympic Games Web site on the Internet.

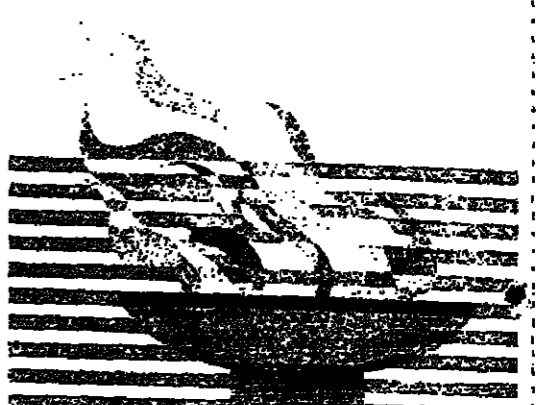
IBM brings a wealth of expertise to this task. It has played a key role in Olympic Games information technology since it first became involved 36 years ago with the winter events in Squaw Valley. Its contributions have evolved over the years, allowing organisers to benefit from wide-ranging technological advances and thus meet the growing demands of each successive Olympiad. IBM's experience in working with worldwide business partners flows directly to the process of making its Games management systems robust, scalable and highly flexible.

When the competitions begin this summer, IBM's most visible contribution—the Results System—will provide an historic first: instantaneous scores, results and updates for worldwide dissemination via the Internet, broadcasting and the press.

The ACOG's confidence in IBM's multiple capabilities is evidenced by the fact that the company was given sole responsibility for Olympic Games systems integration. The goal: to ensure that all technology provided by other ACOG partners—AT&T, BellSouth, Kodak, Motorola, Panasonic, Sensormatic, Swatch and Xerox—works seamlessly together as one total, all-embracing solution.

Bob Neal, Director of Information Systems for the ACOG, comments: "IBM is not just supplying solutions but helping us find solutions. By selecting the right product mix, working with other sponsors and suppliers, and driving to integrate solutions, IBM is truly a partner in our success."

The 1996 Olympic Games form an ideal testing arena for IBM to demonstrate not only its business ethos to a world audience—but the technology behind its unique solutions. The company believes the Olympic Games offer an unrivalled technological showcase and is solidly committed to sponsorships over the years to come, in venues such as Nagano, Sydney and beyond. As the world leader in information technology, IBM can do no less than demonstrate—on a global scale—its ever-growing and ever more productive array of solutions to enhance the staging and enjoyment of the world's greatest series of competitive sports events.



Steve Solazzo, is Vice President, Client/Server Computing, IBM EMEA (Europe Middle East Africa). To write to him via e-mail: solazzo@fr.ibm.com

"Safe-surfing" a key goal in Internet computing

A recent study of 1,300 businesses revealed that sixty percent had suffered financial losses due to information security lapses in 1995. For nearly two dozen of these companies, the total cost of these breaches exceeded \$1m.

This situation, and the publicity around it, has tended to create a climate of uncertainty among many businesses considering whether to take advantage of the power of the Internet.

By way of background regarding IBM's position and activities in this arena, the first point to be made is that computer security is as old as computing itself.

Although changes in the computing environment raise new security challenges, the fundamental issues remain constant. They include:

- Control of access to information
- User authentication and password systems;
- Encryption and decryption of selected data;
- The ability to edit shared databases of information, and;
- The ability of authorised traffic to pass through various network gateways.

With the vast increase in today's network connections and data flow, there are many more links in the transmission and access chain.

The challenge is to maintain the integrity of each link. IBM, a pioneer in security solutions, has come up with a strategy that is two-pronged: to implement local security control to ensure the integrity of the core system, and then to decide on an approach toward maintaining security as the customer interfaces with other computers in a highly networked environment.

To address these issues IBM has developed SecureWay, the common brand for its broad portfolio of security offerings which include a variety of hardware, software, consulting and services to help customers secure their

information technology.

For example, IBM's Internet Connection Secured Network Gateway actually installs a "fire-wall" allowing users to reach out into public networks like the Internet while restricting the ability of outsiders to gain access to internal systems protected within the "firewall."



IBM has also developed new security oversight tools: an audit capability, for example, which allows administrators to assess the security of the system, to access reports on invalid password attempts and attempts at unauthorised access.

Many people worry about threats to privacy posed by the Internet. According to experts, however, the development of encryption technology can actually guarantee both individuals and businesses more privacy than they have now.

Scrambling and unscrambling word and number messages on transmission, through the use of encryption and digital signatures, can ensure the confidentiality and integrity of the data exchanged—as well as the identity of the parties exchanging the messages.

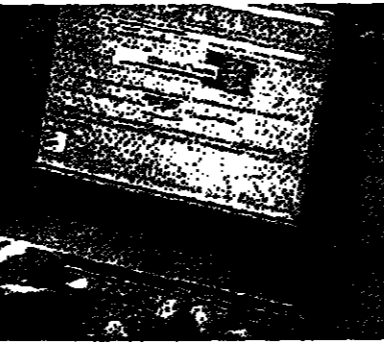
Cryptolopes, for example, is an IBM-developed "electronic post office" that facilitates cryptographic signing and sealing, and is more secure than certified mail. (Now, in the US, when you send "e-cash" to the IRS, you can really prove it.)

Credit card transactions via the Internet, the transmission of

health data and other sensitive material—all are accomplished, when encrypted, more safely and privately on the Net than in any other way.

Of course there are issues yet to be resolved: how to make provision for third party access, those with legitimate claims such as the government in certain investigations, or a company with valid rights to documents in an employee's files.

IBM also pioneered DES, the Data Encryption Standard, based on private key encryption, which



it made available on a royalty-free basis to the public beginning in 1975. Endorsed by the international banking community, DES is used around the world, for example, to encrypt PIN numbers in millions of ATM banking transactions.

Bringing secure electronic commerce even closer is the recently signed agreement between IBM and another leader in computer security, RSA Data Security, Inc. The two companies plan to modify their hardware and applications so that they are interoperable. They have also committed to the development of open cryptography for the Internet, assuring customers and developers safe universal access consistent with current government regulations on cryptographic products.

Security isn't something that a company simply buys, installs and then forgets about. To the contrary, one of the most important elements of IBM's security portfolio is a consulting service to help customers design and deploy ongoing information technology security solutions.

Trained experts assess the possible security risks to a customer's system; they define security needs, recommend and implement security products and services in line with those needs, help administer security policies and practices, and audit security controls—repeating the process when necessary.

IBM knows that security is what will make business move on the Internet and it has the industrial-strength technologies to make the Internet safe for business.

The ten "myths" of network computing

Cont'd from Pg 11

experience on a company's Web site is a real turn-off. Better to invest the time up front to make sure that users enjoy a fulfilling experience right from the get-go.

Myth 6: No one is making money on the Internet.

That's something we hear a lot of, but we take it as something of a lame rationale for not getting on the starting blocks. It's more reasonable to assume, in fact, that those who are profiting from Internet computing probably just aren't blowing their horns about it to any great degree.

The operative principle is not to get uncomfortable if success stories don't abound in your industry. Competitiveness breeds confidentiality, but that's no reason at all for a wait-and-see attitude. Who knows? A rival could be up on the Internet right now, taking customers away right and left!

(Note: for a real confidence-builder, we refer you to a whole range of IBM-based Internet success stories on the first page of this supplement.)

Myth 7: Security is a big problem.

We'd say that it's an issue, a very real one, but not necessarily a problem. To get IBM's view on the current state of play, we refer you, again, to an important front-page story of this supplement.

Myth 8: Now that network computing is here, the client/server model is dead.

Some companies have considered skipping C/S systems in favor of moving right into the world of network computing. But are the trade-offs worth the risks?

Behind today's network-based front ends and user interfaces lie some complex Client/Server-based information systems. With implications for security, distributed data, transaction and multivendor-systems management, messaging and even more.

Bottom-line, companies should probably keep their focus on implementing C/S-based systems as a solid foundation on which to build network computing. Most leading examples of successful networked applications are, in fact, built as extensions to C/S systems.

Myth 9: The Internet is an external tool.

As the song says, "It Ain't Necessarily So!" Too many com-

panies, unfortunately, have overlooked the Web's vast potential in streamlining internal communications and connectivity. As an in-house, corporate tool, the term "Intranet" is particularly apt and descriptive. IBM's experience, for example, in implementing a Lotus Notes-based system for a



portion of our field force is very revealing.

The "Intranet" application became very popular—so much so that we published it on the Web allowing everyone with a browser, and appropriate security authorisation, to access it. On a worldwide basis.

One neat side benefit of this implementation is that it was relatively easy to take a subset of the application and make it available to all Web users, thereby giving access to our customers, partners and others via the IBM home page.

Does all this raise ideas for your company?

Myth 10: If you're not on board it's already too late.

Hey, you already guessed our take on this one. Of course it isn't too late. Just do it!

Take the rational approach. Begin by introducing network computing technologies based on the information to which you want to provide access. Then, move on to integrate these applications with corporate information and operations systems.

Finally, exploit the capability by enabling customers—around the world—to perform "self-service" in virtual malls, catalogues, kiosks or via on-line services. What it's all about, really, is "self-service" in a company's long-

IBM Home Page for General Information:

<http://www.ibm.com>

Network Computing:

<http://www.ibm.com/NetworkComputing/>

Internet Products & Services:

<http://www.ibm.com/Internet/>

John Patrick

IT in manufacturing

FT-IT 15

■ Industry in transition • By Andrew Baxter

The pace of change accelerates

While information technology is increasingly important to manufacturers, they are faced with a growing list of competing IT products. Managers are anxious not to be tied into any one system that might be obsolete in five years' time

I went out to lunch, and when I got back the whole industry had changed" - that was Bernie, a character in the Doonesbury cartoon strip, explaining why his software company had suddenly hit trouble.

In the real life world of manufacturing, developments do not occur quite as fast as that, but anyone revisiting the computers in manufacturing scene after two or three years on a desert island would be struck by the pace of change.

Nowhere is this truer than with the Internet. Three or four years ago, most manufacturers would probably not even have heard of the Net, let alone understood its potential significance for their businesses. But a recent survey of UK manufacturing industry by Benchmark Research, for Computer-View, found that the Net was one competitive tool that industry seems ready to grasp two-handedly. Manufacturers saw the most important potential benefits as quick access to information, faster communications at lower cost and dedicated marketing, while the most important envisaged use was for international communications.

The more forward-looking IT companies have been moving quickly to address the new opportunities. At Intergraph's International Graphics Users Group event in Alabama last month, the US company announced an initiative involving software giant Microsoft which, put simply, enables much-improved delivery and sharing of graphics and engineering information across the Internet.

Earlier this year, Intergraph had launched the first complete line of web server solutions using the Windows NT operating system, and is also pushing its new document management system, DMS, as a way to manage all the technical information being shared

FOCUS

Focus on IT in manufacturing

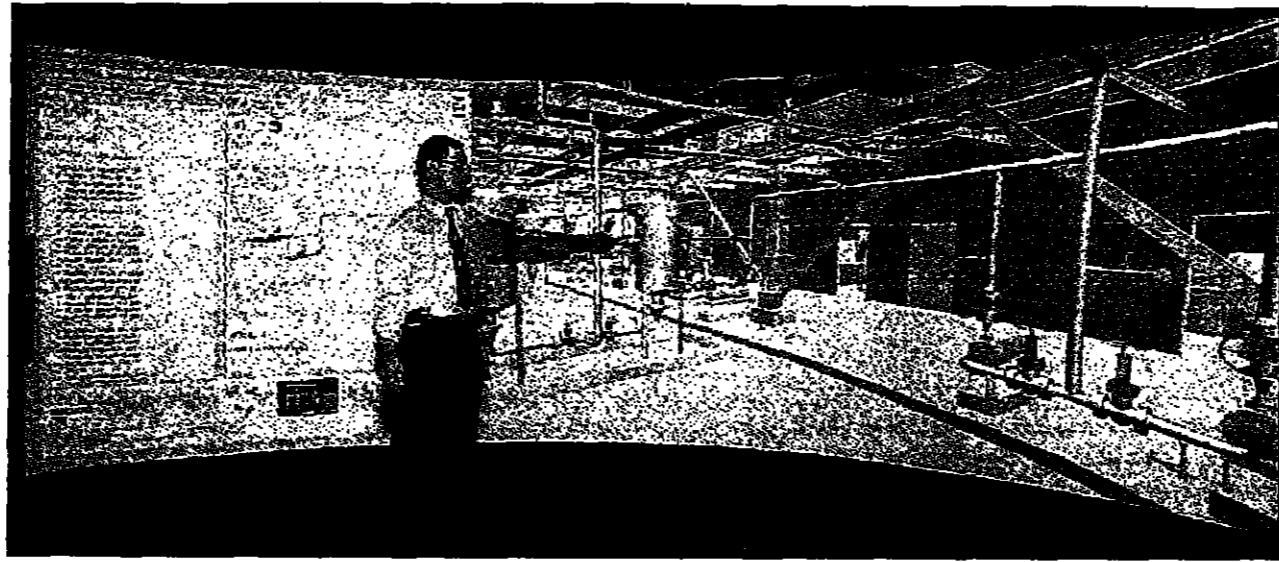
New ways to manage the supply chain and share information via the Internet

between different sites that are linked by the Net. "You need a way to manage these links," says William McClure, vice-president of Intergraph Mechanical. "Otherwise the Net could become a tool for distributing out-of-date data."

According to the Computer-View study, one use for the Internet will be to manage "the extended enterprise" - another phrase that might have sounded unfamiliar in the early 1990s, although the concept of supply chain management was already firmly rooted.

Coming from the same stable as the "virtual" corporation or organisation, the extended enterprise model involves a manufacturer and its suppliers to develop products as one organisation of pooled skills and resources.

The relevance of the Internet to such a model was illustrated this spring with the launch by American Software of Supply Chain Planning. This integrates the capabilities of its



The shape of things to come in global engineering projects: the Cambridge-based Cadcentre's Hyperplant concept demonstrates how engineers of tomorrow will use Internet technology for design work, combining electronic mail and videoconferencing

supply chain management solutions with the Internet to enable companies to manage their supply chain environments easily and cost-effectively.

The product permits the simultaneous sharing of supply chain information. Data can be incorporated from the field, distributors and other resources using the Internet in real time. The information, says the company, can then be assimilated into forecasts, and results can be viewed and adjusted by all levels of the supply chain before the data is integrated with manufacturing or purchasing systems.

Manufacturers will have to choose from a growing list of competing software products and hardware to support their extended enterprise models. "To manufacture in this environment, the last thing you need is a computer system that gets in the way," says David Reid, segment manager for the UK manufacturing and process sector in IBM's AS/400 mid-range computer business.

As one might expect, Reid believes the AS/400 has a strong future in this environment, partly because it comes as one offering integrating communications, a database and software applications from companies such as SAP, Marcam and J.D. Edwards. The capital cost might be higher than for a Unix-based system, he says, but the need for systems integration is avoided.

Meanwhile, software that supports supply chain management techniques has become a much bigger market than some thought five years ago, and one forecast suggests it will be a \$1bn industry by the end of the century. "Supply chain management is set to become even more prevalent," says Arthur Vonchek, director for northern Europe operations at Manugistics.

Manugistics has created a Supply Chain Architecture that draws together real-time data from a range of sources within and between compa-

nies, and integrates it so that managers can access a "single view" of the entire chain. "Scalable client/server technology will see supply chain systems that offer a single, global supply chain image," says Vonchek. "Advanced software algorithms will enable automated 'lights-out' decision making - and Internet and Intranet technology will ensure even greater connectivity between customers and suppliers."

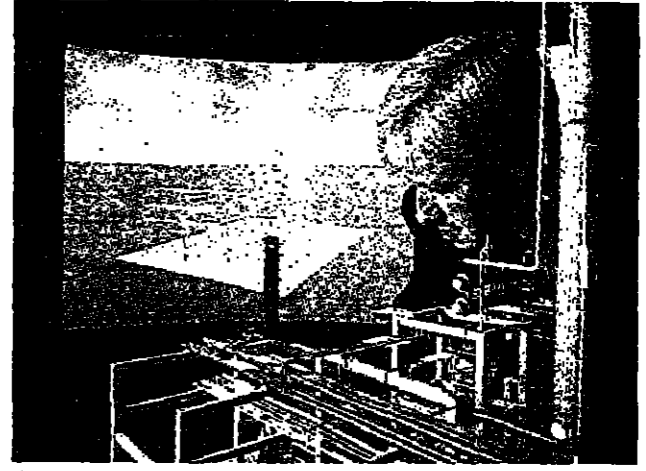
On the product development side, the need for sharing of accurate, up-to-date information is vitally important in an extended enterprise, because the model relies on suppliers taking responsibility for their section of the overall design. This is one reason why the market for product data management (PDM) software is picking up so quickly, although it has only recently reached a level of sophistication that enables its use in an extended enterprise. A PDM package aimed at the extended enterprise was launched earlier this year by Sherpa.

Another important choice for manufacturers is that of an operating system, where - again - the pace of change is accelerating.

"Over the past 10-15 years, proprietary mainframe and minicomputer operating systems such as IBM, Prime and VMS have lost their market to open systems solutions based on Unix variants, followed by PC solutions running under MS-DOS and Windows," says Richard Longdon, executive director of Cadcentre, the Cambridge-based engineering software developer.

One of the most significant recent developments has been that of Windows NT, the Microsoft operating system for which some 800 software applications are now available for the manufacturing sector, ranging from mechanical design analysis to enterprise resource planning.

Windows NT took a while to gain commercial acceptance, but sales picked up early last year. Now, according to Rod



From plastic to a virtual world: a plastic model is transformed into a realistic plant, using Visually, Cadcentre's group visualisation system

Blackwell, Microsoft's UK business manager for manufacturing solution providers, Windows NT is "on a roll" because it can provide an enterprise system, an engineering application or a specific shopfloor solution. Version 4.0, due for release this summer, will feature the Windows 95 "look and feel."

The development of Windows NT led, in turn, to Microsoft BackOffice, a set of integrated applications for the server including the operating system itself, relational database and connectivity to IBM mainframe and midrange systems and networked PCs. When Windows NT and BackOffice is combined with the front Office suite and Windows 95, says Blackwell, manufacturers can achieve "integrated customer-oriented supply chains capable of delivering real-time information across the corporation through a single consistent user interface."

One important testing ground for Windows NT is in computer-aided design (Cad), because, as Longdon notes, intensive graphics applications stretch computers and their operating software to their functional limits.

According to Longdon, Windows NT will become a significant operating system for Cad. But, he says, suggestions that it would eradicate Unix as a Cad operating system need to be taken with a grain of salt.

■ The make-to-order market • By Andrew Baxter

Problems begin after the contract is won

Because of a lack of systems integration, many manufacturing companies have problems translating proposals into live contracts, especially when it comes to creating production plans

Manufacturers can broadly be divided into two camps - mass-production companies building discrete products on a repetitive basis to stock and sell, and "make-to-order" companies which build products that meet the specifications of a single customer.

"Make-to-order" is the fastest-growing segment of manufacturing - in the UK alone, it is worth about £22bn a year, according to a recent survey by Benchmark Research. Another research company, Boston-based Advanced Manufacturing Research, estimates that about 25 per cent of the £32.8bn world manufacturing management software market falls within the "make-to-order" segment.

The IT demands of the "make-to-order" market, normally medium to large-sized engineering companies making everything from buses to robots, can be very different from those of the mass producers. According to Massachusetts-based Visability, which produces a "make-to-order" software package of the same name, "these companies require integrated information systems that manage a lifecycle of highly interrelated processes while providing the ability to respond to changing customer needs and market conditions."

Yet in some parts of the make-to-order cycle, the use of IT is very limited. Successful bidding, obviously, is crucial to success for "make-to-order" producers but the Benchmark survey claimed that lack of computerisation and inefficiency in bidding for contracts was costing British industry as much as £1bn a year.

Only half of the 180 companies questioned used any form of computer software for the bidding process, and then only basic word processing, spreadsheet or database packages for part of the process. The remainder rely on paper-based filing systems, so every proposal is a one-off.

Only 50 per cent of companies monitor the actual costs

(enterprise resource planning) systems sold by Cincom or other vendors. If the bid fails, it becomes part of the historical data that will be used to prepare the next one.

Sinclair says he is pleased with the take-up of the system since its launch. European customers have included Essec, which makes machines for the semiconductor industry, tractor maker Steyr-Daimler-Puch and Endress & Hauser, the German valve and pump producer. German and French language versions were due to be launched this month with a Swedish version following in September.

A separate market is opening up, too, for the sales configuration element of the Acquire package, aimed at makers of high-volume, highly configurable products such as personal computers.

A typical customer is GEC Alsthom Low Voltage Equipment, which is currently in the pilot stage of using the Acquire package. It bought the software mainly for its ability to configure products, and especially air circuit-breakers.

In this market, customers increasingly want a quick quotation on a product that comes in thousands of different permutations but is built from the same few hundred components. The company can now produce a quotation in a few minutes to a customer's specialised request, where previously it might have taken two hours.

Visibility, meanwhile, already has around 300 customer sites worldwide for its product, which is aimed at the enterprise-wide IT needs of "make-to-order" or "agile" manufacturers - everything from sales and quoting to engineering, production and after-sales service. Customers include Pratt & Whitney, Sulzer Pumps and ABB.

Visibility, founded in 1988, owes its success partly to "building from the ground up" for the make-to-order market, rather than adapt a system designed for mass production, says Michael Dunn, president and chief executive.

This is emphasised by Michael Peirce, chief executive of Dublin-based Mentec, which sells Visibility in the UK and Ireland and also has a stake of

about 15 per cent in the Massachusetts company. "The day has ended when a single package could fit both types of manufacturing," he says.

Another element in Mentec's growth has been its focus on developing implementation technologies as much as the software package itself, says Dunn. Some of the user industries' past disappointment with systems that failed to meet expectations was because of failed implementation, he says.

Visibility, which is essentially a one-product company, has seen sales surge to an expected \$32m this year. For next year and 1998, sales should be \$45m and \$60m respectively, says Dunn. Mentec's sales growth from Visibility should be similar, says Peirce. "It's our flagship manufacturing product and the development of Visibility into an enterprise-wide product will keep our hands full."

The relevance of products from companies such as Visibility, Mentec and Cincom could become broader as the lines blur between mass production and make-to-order.

Large companies that have traditionally espoused repetitive manufacturing are increasingly looking to become agile and order-based too. But that is hard to achieve, and - predictably perhaps - Peirce says any company that tries it without a dedicated make-to-order software package could end up "dead in the water."

Cincom Systems, tel UK (0)1223 542300 523216; Mentec, tel Ireland 3531 255 8444, fax 3531 255 2808; Visability, tel US 508 694 3000, fax 694 3020

Survey on IT in manufacturing

The results of a pan-European survey on the impact of IT in electronics manufacturing will be featured in the FT-IT Review in September. The survey, partly funded by IT vendors, is being carried out by analysts at Cambashi in Cambridge. For details, call Brian Gott or Mike Evans at Cambashi on +44 (0)1223 460 438, fax +44 (0)1223 461 055; e-mail, 100431.3342@CompuServe.com

■ Constructional steelwork sector • By Andrew Baxter

Boost for the building industry

European project highlights the advantages of using IT to integrate manufacturing and management processes

How can an insular craft industry that is made up of many small and medium-sized companies, and is perceived as not investing enough in technology, be turned into a state-of-the-art integrated manufacturing sector?

One approach is to introduce computer integrated manufacturing techniques and develop the related enabling technology and standards. This is the aim of the Europe-wide "CIM-steel" project, which is aimed at placing the European constructional steelwork sector in a leading position to compete with overseas rivals and alternative construction materials.

The Ecu45m (\$56m/£35m) Eureka project is about tailoring for the constructional steelwork industry the kind of computer integrated manufacturing systems successfully used within the aerospace, automobile and general manufacturing industries. To achieve this, 45 organisations including designers, fabricators, software houses, research and trade organisations and academic institutions have come together from eight participating countries.

In the UK, the project has been partially funded by the Department of Trade and Industry, with Taylor Woodrow, the construction group, acting as lead organisation. The other countries involved are Austria, Denmark, Finland, France, Italy, the Netherlands, and Sweden.

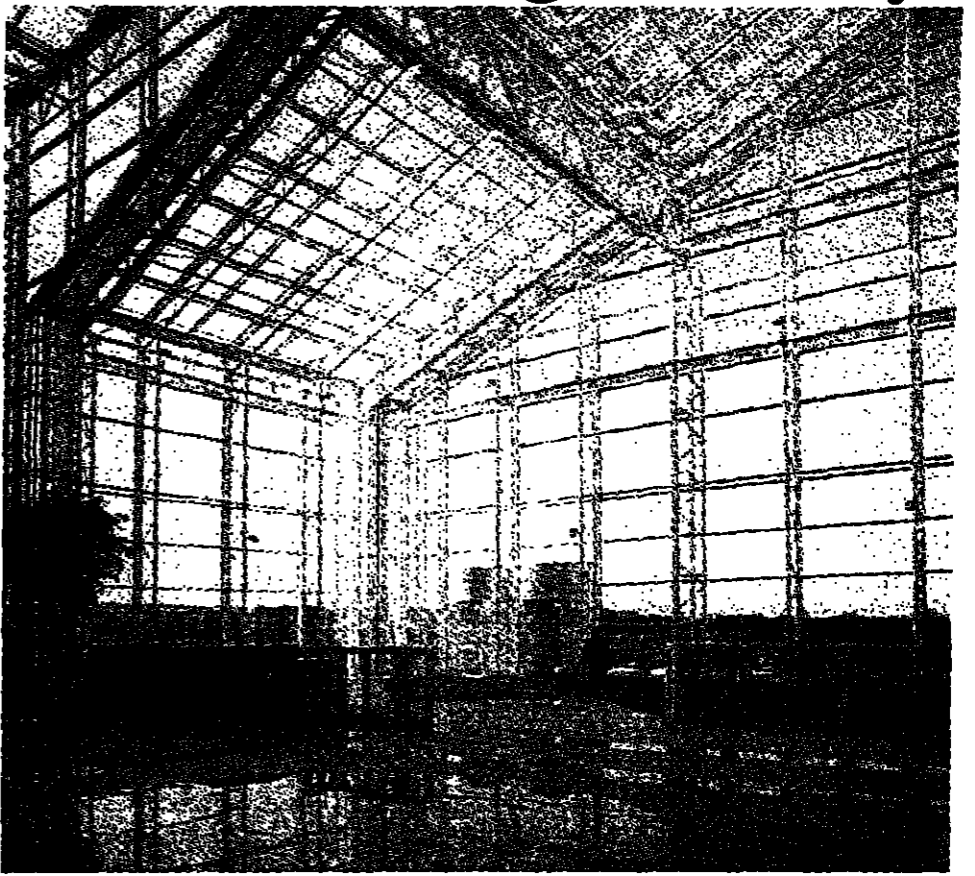
Among several important goals, the project aims to:

□ Raise awareness within the industry of the business advantages of using IT to integrate design, manufacturing and management processes

□ Develop the enabling technology required for the exchange of technical information between different software products used by different organisations, leading to international standards.

□ Exploit the opportunity provided by the introduction of "Eurocodes" to develop integrated and harmonised design procedures, guides and aids for use in the collaborating countries.

□ Incorporate the design



A typical structural steel building - this one is located at Swindon, Wiltshire - which can benefit from the CIMsteel project which integrates standards in construction work with steel

procedures and information exchange technology into new world-class software.

□ Rationalise the provision and specifications of materials and products as part of the integration process.

□ Develop advanced databases and management information systems which are compatible with the emerging standards.

□ Develop and demonstrate a cost-effective robotic welding system.

□ Investigate the wider challenges and issues facing the industry.

With such broad aims - and a large number of participants - it is perhaps not surprising that a project conceived in 1987 is concluding only this year and has taken up some 400 man-years of work. Dr Fikry Garas, CIMsteel project manager and leader of advanced technology projects at Taylor Woodrow Construction, points out that CIMsteel is "unique in terms of its value and scope, as it is trying to address the integration of the whole building project."

The project began in earnest in 1988 with a definition phase, followed three years later by the start of an implementation phase. Last autumn an impor-

tant milestone was passed with the launch of CIMsteel Integration Standards (CIS) by Tim Eggar, the UK industry minister.

These are a set of standards for the direct digital exchange of engineering information between the diverse software packages used during the evolution of a steel framework.

The key components are a series of standard specifications for information models which help software vendors to write an export and import translator into their product. These can convert or retrieve the project data as a CIS "neutral file" from which data can be picked up and read by any other CIS-approved software package.

The translators do not affect the software, so users can continue to choose the best package for their requirements. But by using the translators, vendors and users will not need to liaise to ensure compatibility.

Using the standards, it is hoped, will increase productivity. Time will be saved as information will not have to be regenerated, quality will improve because the errors introduced in data re-entry will be eliminated, and the collaboration between partners, suppliers and clients will be improved. Garas says the stan-

dards were the main focus of the CIMsteel project, but there have been other developments, some of which are already available. For example, the project has supported the preparation of best-practice documents which will be widely used by the steel construction industry.

With the project formally closing this year, it already has a critical mass to ensure the intentions can be turned into reality, says Garas. At the time of the standards launch, 11 software vendors had committed to put products on the market that meet the standards, and more have made commitments since then.

Also, a number of end-users have begun other developments from their IT suppliers, are already following the standards. "This year, we will see the implementation of the standards in real-life projects," says Garas.

The momentum will also be sustained through events such as workshops, seminars and demonstrations of how the standards are being applied. One such demonstration at a recent DVI event was of a real industrial project being engineered by Foster Wheeler Energy in one of its UK offices.

Further information from Dr Garas, tel UK (0)181 575 4505 or email f.garas@telconsult.co.uk

Advances in computer-aided design • By Mike Farish

Variations on a theme

How software was used to redesign the Polaroid Spectra camera within specific criteria

When a London-based design consultancy, Fankhurst Design & Developments (PDD) was given the job of redesigning the Polaroid Spectra camera, the fact that it had to start from an existing design was little help. The project manager at PDD, Paul Ferris explains that the camera had originally been designed back in the early 1980s, but as the mid-1990s neared, Polaroid felt the camera needed a complete overhaul, especially in the light of plans to launch it into the US and Asian markets.

New software is accelerating product development

was perceived to have an "old look" and poor ergonomics, with the handstrap and eye cup needing to be made much more user-friendly. But at the same time, a key part of PDD's brief was that the redesigned camera should, as far as possible, be constructed in much the same manner as its predecessor using similar fabrication techniques and components, such as snap-clips, lugs and ribs.

In the industry phrase, PDD had to retain as much as they could of the original "design intent". The company's use of computer-aided design (Cad) technology, however, made

various "constraints" that limit or condition the design options open to them.

Users can, for example, write into the software instructions that in any particular design, some specific element - a wall or a spar - must always meet another element at a set angle or that it must be twice as long or three times as thick.

Any such geometrical condition can be set provided it can be represented as a mathematical equation.

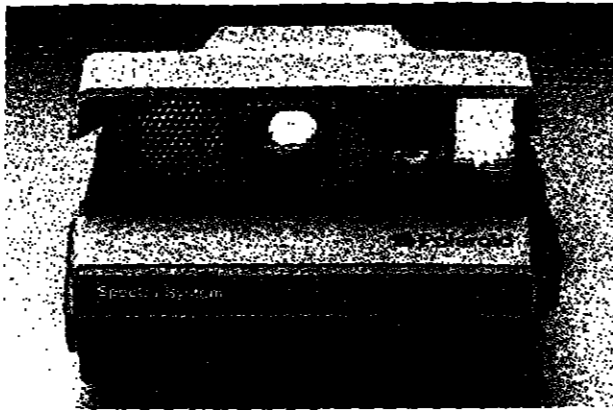
Paul Ferris says that after constructing a model of the existing camera within the software, PDD was able to experiment with new configurations easily and quickly by stipulating a few relatively simple constraints, largely the maintenance of some key absolute dimensions and the relative relationships of some others.

"When a wall was extended, the clip behind it would automatically stretch accordingly," he says. When the job was complete, "all of the external faces of the camera had been changed".

In the event, the redesign took 37 weeks to complete, but without the Cad software's ability to manipulate the geometry in a variational manner, Paul Ferris estimates the project would have taken half as long again.

The capability that that proved so useful to PDD is now embodied in virtually every main Cad software package - but to different degrees, in slightly different ways and under different names, such as "parametric", "adaptive" and "dynamic" modelling. But all involve the same basic discipline of writing equations to set constraints within which designers have the freedom to experiment and have the software show them how changes in one area of a design will affect the rest of it.

These new Cad technologies have been seeping on to the market for several years. Many companies are now getting to grips with the potential they hold both for accelerating product development timescales and



The Spectra: precise exposures and automatic focus in milliseconds

enhancing design quality through greater freedom to experiment. Just how big an impact they can have on the design of completely new products is still unclear, but their utility in manipulating existing design data to produce derivative products is certainly considerable.

Hornby Hobbies in Margate, for instance, manufactures model trains and cars, for use in electric train sets and the popular Scalextric car racing game. By definition, its prod-



Polaroid's new digital camera, the PDC-2000 range, is aimed at commercial customers, and has been under development for four years. Prices start at \$2,995

ucts, at least in external appearance, are miniature facsimiles of their full-size equivalents. The company has, for instance, just released its model of the Eurostar Channel Tunnel train.

But according to Mike Walters, product engineering manager, adapting existing design

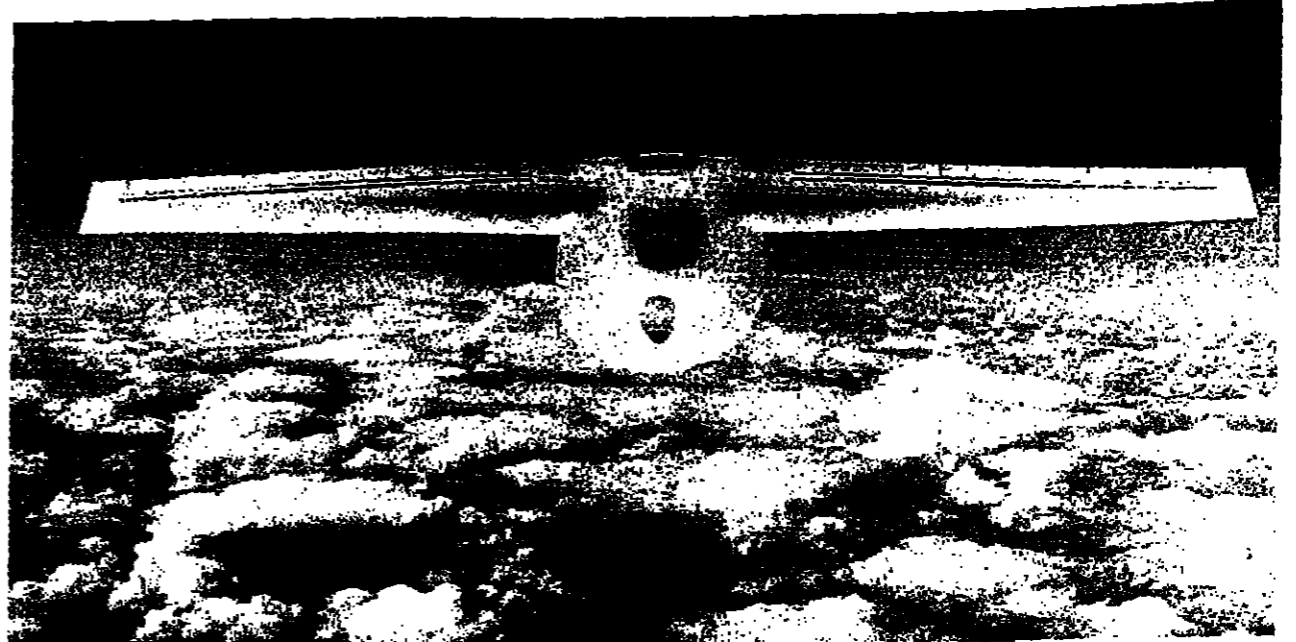
information to Hornby's own requirements is far from easy. Even where it receives CAD data from the manufacturer of the real-life car or train this is often incomplete or segmented in a way that limits its usefulness. Hornby, he points out, is aiming to produce a single, consistent Cad representation of the whole model surface that can be used to drive manufacture of the required mould-tooling.

Within the last year, Hornby has therefore installed the Pro/Engineer Cad software system from Parametric Technology Corporation (PTC), the US company widely regarded as pioneering the constraint-based modelling approach.

The company is fully exploiting the Cad system's ability to store complete 3D design data. It is, for instance, using 3D Cad information to drive a stereolithographic "rapid prototyping" process, which can bypass the former need for handmade wooden models of its products to support tool-making. In addition full colour Cad images can be used to accelerate the approval process by the marketing department.

The company is also beginning to explore how it can exploit the software's parametric modelling capability.

Intriguingly, Mike Walters says one obvious application will be in validating the action of the pistons and drive-rods on model steam trains. The variety of wheel sizes, axle lengths and configuration types currently make this a very demanding task. But he is confident that the leading-edge CAD capability, the company now possesses will soon make much simpler the job of replicating the age of steam.



Built in record time: the Darter, the world's most advanced unmanned reconnaissance aircraft was completed in just nine months after a team of 50 designers from Lockheed and Boeing started work on the project. A significant factor in this time-saving was the use of Catia Cadcam software, run on IBM PS/6000 workstations and servers. Darter is the first military aircraft designed without the creation of physical design mock-ups

Production costs • By Andrew Baxter

Even at the earliest stages of designing a product, companies want to know how much it is going to cost to manufacture. Until recently, there has been no quick, accurate way to do this and the only solution was an estimate or guesstimate.

However, an innovative software package launched in the US two and a half years ago by Massachusetts-based Cognition Corporation uses artificial intelligence to solve the problem. The software, Cost Advantage, is sold exclusively in the UK by Milton-Keynes PS Industry Group.

The software takes basic "back of the envelope" designs and gives an early indication of how much a new product will cost to develop and manufacture. It then provides continuous feedback on cost and productivity as the design evolves, updating the cost as the design changes.

At its heart is a series of process models which are used to build up a knowledge base on every type of labour and material that is likely to be involved in the manufacturing and assembly process.

Mike Cronin, Cognition's chief executive, points out that because the software is a rules-based expert system, companies can link it with their own

Farewell to guesswork

Artificial intelligence provides comparative cost estimates for different manufacturing methods

corporate knowledge-base and question it on why a product cost a certain amount to make. This gives it a clear advantage over traditional spreadsheet-based methods of cost calculation.

But, says Cronin, the package has caught on so quickly not just because of its functions - just as important is the way it can be linked to customers' existing Cad software. Indeed, most customers purchase the software as an add-on.

The software will work with any parametric or feature-based solid modelling system - i.e. one that recognises, for example, a round hole in a design for what it is, and not simply as a circle - and has already been fully integrated with Parametric Technology's Pro/Engineer software.

To use it, a designer would pull down a menu, and click on a button. The software first checks that the product can be manufactured on the user's factory equipment, then calcu-

lates the cost. Integration with SIDRC's IDEAS Master series and IBM's Catia software will follow later this year, says Cronin. Cost Advantage can also be used with Cognition's own pre-design analysis software, Mechanical Advantage.

At the other end, Cost Advantage can be fully integrated with process planning systems, linking particularly effectively with PSI's own SuperCAPES computer-aided process planning, estimating and costing system.

The initial response was "absolutely staggering," says Russell Howarth, PSI's sales and marketing director. Aerospace and automotive customers were particularly interested in the software, which costs about \$20,000 a seat.

Users in the US are finding that they can now produce cost estimates up to 85 per cent faster than with alternative methods. A user could quickly establish whether it would be cheaper, for example, to make something out of sheet metal, by machining it or by using injection moulding.

Cost Advantage runs on Unix but a Windows NT version will be available probably by the end of the year, says Cronin.

From its European headquarters in France, Cognition is now pushing into other conti-



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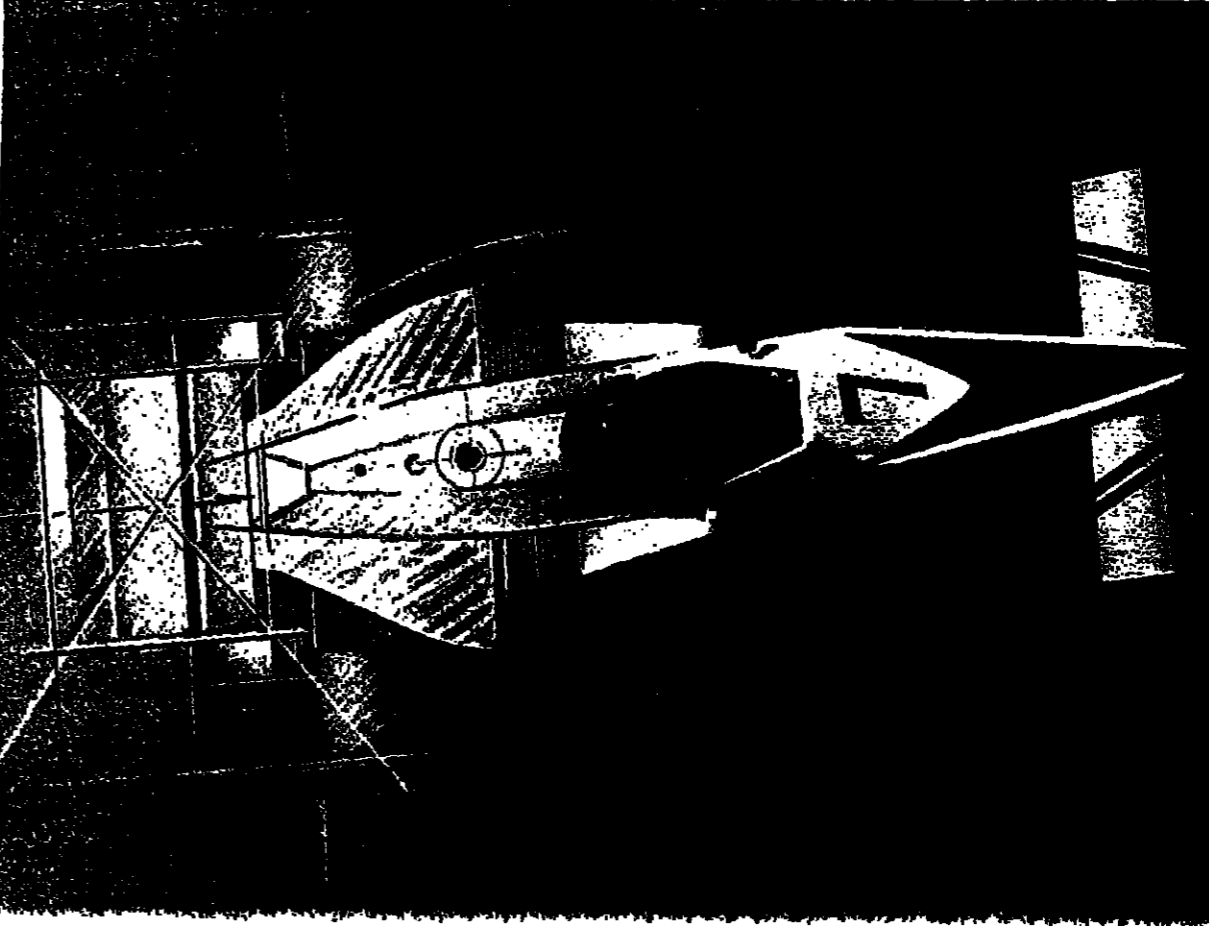
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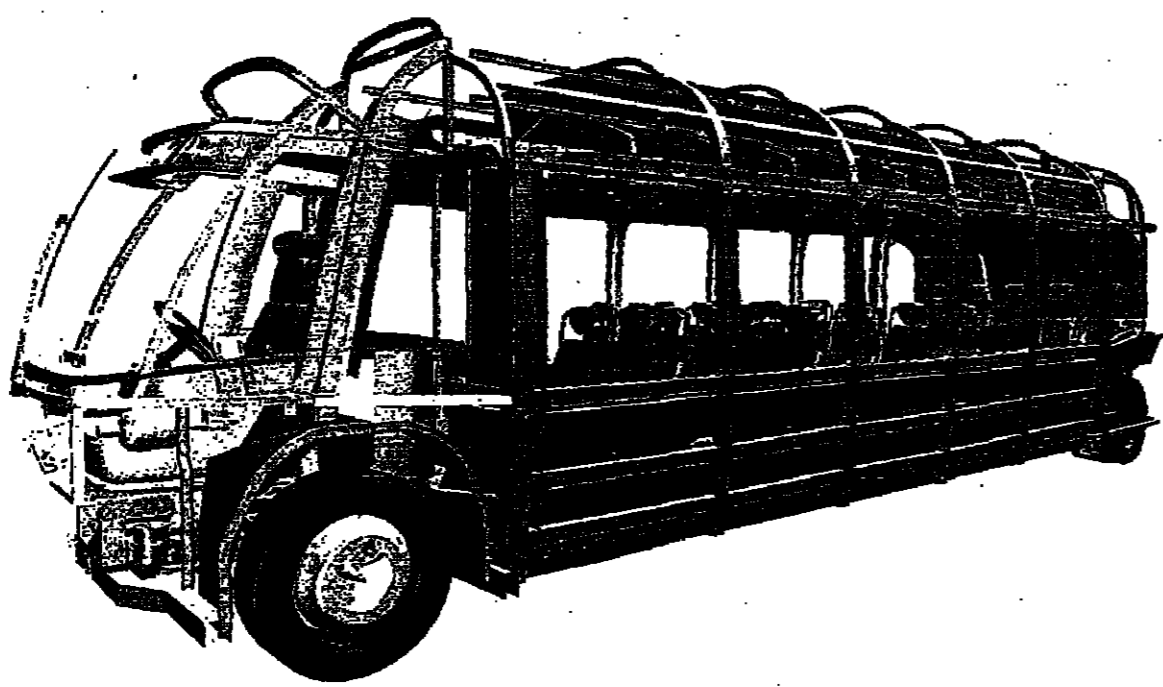
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Futuristic approach to vehicle development: Volvo Bus used an electronic mock-up for its new 'environmental concept bus' and greatly reduced design time, using only half the staff of a typical design project. Volvo used ComputerVision's CADD5 software system, so that 75 per cent of components were never translated into physical form during the design stage, but in the final assembly each component fitted accurately

■ **Product data management systems** • By Andrew Baxter

A rapidly evolving market

Companies are under increasing pressure to shorten design and development cycles

Demand is continuing to grow for product data management (PDM) software systems as more companies realise the benefits they offer. According to CIMdata, the market research company, worldwide sales of PDM software and services will exceed \$500m this year and grow at a compound annual rate of 23 per cent until 2000.

PDM software has been available for about a decade, but its roots extend 15 years earlier to the original MRP (materials resource planning) techniques for manufacturing products efficiently. From MRP evolved engineering or electronic data management (EDM), which uses computer technology to help manage documents, for example those used by engineers in product design.

That, in turn, grew into PDM, which is used to manage, organise and provide instant access to the vast amount of information needed at all stages of product design, development, manufacturing and support.

In the mid-1990s, the PDM market is still a long way from maturity, and the market continues to evolve as manufacturers' requirements change. As Sherpa, one of the biggest PDM software vendors, says, the emergence of the "virtual" or "extended" enterprise makes additional demands on PDM as manufacturers establish closer links with customers, partners and suppliers, and subcontract more elements of the product lifecycle to outside organisations.

To make collaboration work, however, manufacturers need to do more than share data, says Sherpa: they must extend their processes to partners and enable true electronic collaboration. Also, while these trends are making development cycles more complex, companies are under

increasing pressure to shorten those cycles.

Recent new products from the PDM vendors are aimed at addressing some or all of these challenges. Earlier this year, Sherpa launched an enhanced second-generation PDM system called PDMII aimed at helping companies meet demands for a more comprehensive approach to management of data.

It supports the entire product lifecycle, from creating initial concepts through designing, planning and manufacturing to selling and supporting products; manages a wide variety of data types, and has a much wider user base than would be the case in EDM or earlier PDM; there could be thousands of users in the extended

PDM software gives instant access to a vast amount of data at all stages of the production process

enterprise, including various suppliers and partner organisations, at tens of different sites worldwide.

An important feature of PDMII is so-called "object-based application libraries" which are the result of the encoding by Sherpa of its knowledge of PDM processes. Companies will be able to select objects that provide the functions they need and quickly assemble them into specific applications, without having to write custom code to create or connect the objects.

Also this year, Centra Technology introduced Release 3.0 of Centra 2000, its flagship EDM/PDM software suite. Advances in the new version include the introduction of alternative methods of deriving multiple products from a generic design, through a Product Structures facility which Centra says will be particularly use-

ful to manufacturing companies.

Other features include "close-coupled" interfaces with two popular Cad packages, AutoCAD and Pro/Engineer, allowing access to drawings and models to be managed from within Centra 2000 during revision cycles; support for databases distributed over multiple servers; and support for both Windows NT and Windows 95, the Microsoft operating systems.

Meanwhile one of the bigger players in the PDM market, Hewlett-Packard's mechanical design division, has launched HP Precision Engineering (HP PE)/WorkManager for Workgroups, one of the first PDM solutions to be specifically configured for workgroups.

The software is designed to be easily customised and allows all product data to be available to workgroup and team members, facilitating the concurrent engineering process. As well as being designed as an open system, it is fully integrated with HP's P/EM/10 2D design and drafting system and its PE/SolidDesigner 3D solid modelling solution.

Finally, in April, Adra Systems introduced version 4.0 of Matrix, its object-oriented PDM software which features a number of important enhancements on previous versions, aimed at enterprise-wide information management. These include a World Wide Web/Internet enhancement, support for additional platforms, and expanded international support enabling Matrix to accommodate the wide-byte characters found in many Asian languages. It also has several tools to enhance productivity and an expanded developer's toolkit. In the UK, Huntingdon-based Quorum Data Management is the principle reseller of Matrix.

□ **Contacts:** Adra Systems, tel US 508 937 3700, fax 508 453 2462; Centra Technology, tel UK (0)1203 537102, fax 537032; CIMdata, tel UK (0)1203 441129, fax 451919; Hewlett-Packard mechanical design division, tel UK (0)1344 362091, fax 362070; Sherpa, tel US 408 433 0465, fax 408 943 9507; ComputerVision, Coventry, tel UK 01203 417718.

■ **Computer-aided production engineering** • By Andrew Baxter

How to get the best out of production lines

IT helps to set up machines and give improvements in output of up to 22 per cent

While product design and manufacturing are already heavily computerised, there is an important area in between where IT has not penetrated so deeply - nor are its benefits so well understood.

This is the area called production engineering, preparing and setting up machines to produce the components that have been designed electronically.

"In the other two areas, a lot of money has already been spent, and if you invest further you are only tweaking your performance," says David Blunt. "If you spend money on the area in between, you can have a big impact, as less has been done previously."

Mr Blunt is UK country manager for Israeli-based Tecnomatix Technologies, which claims to be the world leader in the market for computer-aided production engineering (Cape) software. The company, which went public in the US in 1993, had sales last year of \$33.1m, more than half of which were in Europe. Its aim, says marketing director Lee Alnes, is to plug the "huge gap" between design and manufacturing by providing IT tools for production and process engineering.

Tecnomatix is probably best known for its Robcad software launched in the early 1980s and widely used in the automotive industry, which works out and simulates how robots will perform a task on the production line, ensuring they do not collide with the product, other

machinery or each other.

A second product, Vallisys, is a quality engineering tool for ensuring that parts are manufactured in accordance with the design. Some of the experience gained in developing these products have been put to good use in creating Exaline, which is designed to enhance the production capabilities of printed circuit board (PCB) assembly machines and lines used widely in the electronics industry.

Exaline, formerly called Paragon, stands for "expert assembly line." Manufacturing PCBs is a highly automated business: robots from a line of different machines, not necessarily from the same manufacturer, pick and place groups of components as the board moves along, with perhaps a handful of components inserted by manual operators at the other end.

Some PCB manufacturers, however, are still using manual methods to work out the best way of doing this for each job - keeping each machine busy, ensuring the robot or the component it is holding do not collide with a component that has already been placed.

Exaline, says Tecnomatix, not only saves time, reducing to perhaps half an hour a laborious trial-and-error task that can take days to complete, but also does it better. This is where high-volume PCB manufacturers can obtain big benefits from the software.

If a board can be produced in 50 seconds rather than 60, the manufacturer is making much better use of its expensive capital equipment. The software will work out, for example, that a second can be saved by turning the board 90 degrees at

one point in the assembly.

"You would not bother with that if you were doing the set-up by hand," says Alnes. "but if you cut out a few seconds here and there, it all adds up."

The software works by defining and redesigning PCB assembly lines in an off-line "virtual manufacturing" environment. It takes the PCB design data, automatically separates groups of components for each assembly machine or manual station, balances the workload of machines and stations whose capabilities overlap, then optimises the performance of each machine, using dedicated algorithms (mathematical formulae) and detecting any placement collisions.

Then it graphically simulates the assembly machine and manual station operations, allowing the user to zoom in to areas that need further inspection and get exact cycle times for different parts of the process. Finally, it generates machine programs, set-up instructions and other reports and drawings needed for the manual and automatic assembly operation.

The software has allowed PCB manufacturers to get improvements in output of as much as 22 per cent from their machine lines, although the gains are smaller for the latest state of the art PCB machines. For a high-volume PCB producer, such gains could be very important, while the dramatic reduction in set-up times would be more significant for a more specialist, low-volume supplier.

For obvious reasons, the manufacturers of PCB machines were initially wary of Exaline, as it could be viewed by their customers as an alternative to buying an

extra machine. However, the machine-makers have since realised that, in the long run, a software product that improves their customers' output is useful for them too. A typical Exaline system would cost \$50,000-£75,000, which, Blunt admits, is a lot of money for software.

The problem for Tecnomatix, however, is not the cost but that customers will not believe the claims made for the system - for example, that it could in some circumstances pay for itself in five weeks. "Time and again we have to prove ourselves," says Blunt. "but we are now building up lots of references."

Development work on Exaline began in 1982 and the first sales were made two years later. So far, most sales have been in North America, but Tecnomatix is expanding its presence in Europe by opening offices dedicated to selling and supporting Exaline.

These are at Staines in the UK and Munich in Germany, and a French office where will open in Paris soon.

The first generation Exaline software works out how to do a single job on a line of machines, while the second generation - just launched - can work out how a line can handle several different PCB boards at once. The third generation will bring factory planning to the PCB industry, working out the best way for several machine lines to handle dozens of different jobs. Work on that is already under way, says Alnes, and it could be ready in a year.

□ **Contact:** Tecnomatix Technologies, tel UK (0)1784 89640, fax 896592. Alternatively, email tec@tec.com.

■ **Information retrieval:** Excalibur software • By Jane Stirling

Frogs have a lot to teach us

Software with the power of pattern recognition is a boost for manufacturers - and politicians

The ability of political parties to excavate information from a database for fast rebuttals can be vital to success in the cut-and-thrust of politics.

An electronic filing system (EFS), dubbed by UK newspapers as New Labour's "key weapon", the Excalibur EFS is no ordinary information retrieval system. Nor are its uses limited to excavating through mountains of information in the battle of party politics.

Excalibur EFS is an off-the-shelf software tool for use across the board, in any company or institution where there is a need to store and retrieve information rapidly, easily and accurately.

Developed by a biologist, John Dove III, Excalibur EFS has interesting origins. The new technology is based on adaptive pattern recognition processing (APRP), which exploits - for example - the way that frogs recognise their food, distinguishing edible fly species from similar ones that are not part of the diet.

APRP allows the rapid automatic indexing of digital data from a variety of sources, including paper, electronic and sound, and is based on conversion of information to binary patterns. In retrieval, EFS searches for a pattern in digital data and not for specific words.

All successful businesses are inundated with information from numerous sources, whether hand-written, word-processed, graphical or e-mail. One such company is Dominick Hunter, the Durham-based international manufacturer of nitrogen gas generators for deep-freezing and high-quality filtration, separation and purification products for compressed solids, liquids and gases.

The process division has thousands of stored documents relating to every conceivable aspect of company business, including test reports, customer-trial information, correspondence, purchase orders, requisitions and design drawings.

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retrieval. Excalibur EFS provided a simple and effective answer.

The difficulty in retrieving information on past projects was costing Dominick Hunter time and money. New proposals for potential customers had to be started from square one, instead of re-using relevant information from earlier projects.

The ability to locate documents quickly and accurately was an option that would greatly reduce time to market and increase customer satisfaction through improved efficiency.

Previously, the director of group information services, Joe Witherspoon, had explored using a high-tech database with keywords as a means of retrieval, but all such traditional document retrieval systems have problems. With keywording, information that becomes relevant at a later stage, may be lost.

Subjective choice of the keyword, or its misspelling, can lead to further information loss and the need to index information requires a substantial input of time by a person with sufficient understanding of company business to assess the relevance of each

document and the key words within them. Change of staff within a company can lead to the loss of the keywords themselves and with them access to valuable documentation.

Joe Witherspoon was impressed when he saw the capabilities of Excalibur EFS. The system eliminates the need for manual indexing, keywording and its associated potential loss of information by automatically indexing every character on every page.

Data can be retrieved simply by keying in significant words and so literally any information in the document can be retrieved.

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New feature

Excalibur EFS has one more unique feature in the world of information retrieval systems: until now, optical character recognition (OCR) processing errors have represented one of the most difficult challenges to the successful implementation of document imaging.

The occurrence of such errors are often underestimated and, depending on the quality of the scanned document, as many as one-fifth of all words might contain a character fault. If this includes the keyword, the document is lost. By searching for a digital pattern, Excalibur EFS can retrieve information even though words are misspelled. Termed "the fuzzy search engine", errors as great as "bolsfuatorials" can be recognised as "bills of materials" and relevant documents listed.

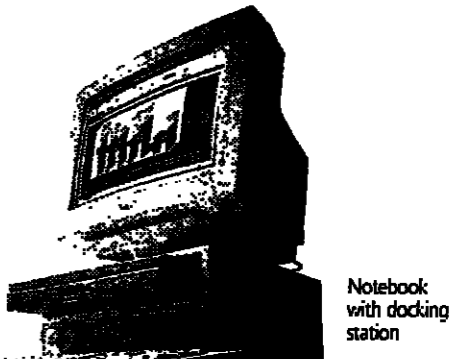
With a view to the future, the process division intend to utilise Excalibur's newly introduced Retrieval Ware, which will enable its worldwide salesforce to use their laptops to access the Internet to seek and retrieve information via Netscape.

Since installing Excalibur EFS and emptying filing cabinets, the process division at Dominick Hunter has been able to create a lot of premium office space. According to Mr Witherspoon: "ignoring the time saved in locating information, just getting rid of the paper has justified our expenditure."

The paperless office, hitherto the stuff of dreams, is emerging at last.

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Until now, choosing a portable PC could mean compromising on power and flexibility. Elonex's NB-500/1 notebook changes all that. Even the basic specification of the NB-500/1 offers PC Pentium power and a colour screen. And its modular design means that despite its small size and light weight, users benefit from a wide range of alternative configurations, including an optional CD-ROM drive. This Notebook has been designed to beat the best in the world, matching the versatility and processing speed of much bigger and heavier machines. Its Pentium processing power, multimedia capabilities, upgradeability and performance certainly puts the NB-500/1 in a class of its own.



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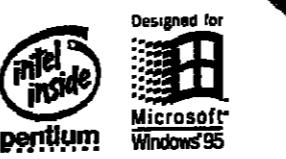
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The virtual manufacturer . . . By Geoffrey Wheelwright

Retailers are already setting up electronic storefronts that only pass on orders to whichever contracted manufacturer operation they want to supply the goods, using a new system, developed by computer database software giant Oracle, that it is about to embark on a significant new technology trial of an electronic commerce system for the Internet.

Code-named "Project Apollo", the goal is to produce a system that will not only allow customers to buy goods electronically over the World Wide Web, but will also permit retailers to electronically pass on customers' orders to suppliers and then on to whatever company will make delivery of the goods.

According to Mark Jarvis, vice-president of marketing for Oracle's server technologies, the company will start the trials worldwide this summer in conjunction with VeriFone - a global provider of transaction automation and Internet commerce solutions, used to deliver electronic payment services to financial institutions, retail merchants and consumers - as well as government agencies, healthcare providers and benefits recipients.

News of these trials follows hot on heels of an announcement earlier this year about a strategic alliance between Oracle and VeriFone. The alliance will create an integrated end-to-end Internet payment system that they claim is safe for open electronic commerce.

The system, which is likely to be available by the third quarter of 1996, is intended to allow businesses and consumers around the globe to purchase products and services quickly and securely over the World Wide Web.

The alliance is focusing on combining Oracle's WebServer software with VeriFone's secure payment software, to produce the first payment-enabled WebServer on the market. Oracle and VeriFone say that using this electronic commerce product, merchants, banks and other financial providers will be able to offer an open online payment system to handle Internet transactions.

They also claim that this payment-enabled WebServer would mark the end of window-shopping-only on the Internet. Currently, Web users view an endless variety of products and services offered by vendors around the world - but a consistent and secure payment capability does not exist.

"Internet commerce is at a trickle today, but it will rap-

Coming soon: goods made to order, via the Internet

The 'virtual manufacturer' could soon be an increasingly popular business entity as electronic commerce makes it possible for consumers to buy 'products to order' via the Internet

idly become a torrent once the issue of handling large volumes of transactions is solved," says Dudley Nigg, executive vice president of Wells Fargo Bank, a key customer of both Oracle and VeriFone - and a participant in developing the alliance.

"This announcement paves the way for commerce-enabled business on the Internet. Wells Fargo Bank is looking forward to working with merchants using Oracle WebServer, commerce-enabled by VeriFone payment software."

Oracle and VeriFone intend to integrate VeriFone's Internet payment software with Oracle's WebServer - and they say that it will allow merchants and businesses to accept payments via the Internet from consumers purchasing products or services.

VeriFone and Oracle also intend to incorporate the VeriFone Pay Window software into the Oracle PowerBrowser - an embeddable Web browser - for use by consumers. VeriFone's Pay Window software would provide transaction options, such as different credit cards, and make the Oracle PowerBrowser software more user-friendly without excluding users of third party browsers from the transaction system.

Oracle and VeriFone say they also intend to develop an Oracle/VeriFone Internet Gateway that would be used by financial institutions and related businesses interested in accepting payment transactions over the Internet.

VeriFone will provide the software that offers secure payment-processing solutions, and Oracle will provide the Web server and systems integration services. The companies say that this Oracle/VeriFone Internet Gateway would be designed to support all standard compliant software supplied by Internet Commerce providers, such as the SET standard proposed by MasterCard and Visa.

"This alliance between Oracle and VeriFone is the first to make the Web safe for broad-scale electronic commerce."

claims Ray Lane, Oracle's president of worldwide operations. "Oracle's WebServer combined with VeriFone's payment processing expertise creates an ideal solution that eliminates concerns about the viability of Internet commerce."

Both companies say they are strongly committed to open solutions and intend to work with existing systems such as credit card transaction protocols and new ones to be developed in the future, such as micro-payments and chip cards.

The companies also insist that they do not intend to

Worldwide trials for Project Apollo, for 'products to order' via the Net, begin this summer

build a proprietary system based on charging vendors or customers per transaction. Instead, they say their aim is to provide the transaction infrastructure and gateway to bring existing electronic payment systems to the Internet.

"Providing our payment technology through Oracle's WebServer moves us toward our goal of making the Internet commerce-ready for the huge volume of transactions we see on the horizon," says Mr Hatim A. Tyajji, chairman, president and chief executive officer of VeriFone.

"We want to repeat in the virtual world what we successfully achieved in the physical world with our point-of-sale systems. We plan to accomplish this by universally installing open and interoperable payment technology that is secure and easy to use."

Initially, the two companies intend to offer payment modules with two different levels of capability. The first system would use VeriFone's basic merchant-payment capabilities,

enabling merchants to use Web servers for Internet credit card processing and automatically to handle authorisation, credits and settlements, and basic payment administrative management.

The enhanced system, for larger and more complex merchant requirements, would include extensive administrative functions such as transaction reporting. VeriFone intends to extend functionality which will allow vendors to add options such as electronic cash, electronic checks, smart cards and debit cards.

The system would integrate Oracle's security technology with VeriFone's secure payment software based on industry standards and *de facto* standards, creating one of the most secure Internet payment products available.

Oracle WebServer 2.0 supports the SSL 2.0 (Secure Sockets Layer) security standard for encrypting data between the Web browser and Web server. The server also provides basic and digest authentication to prevent unauthorised access to Web server content and integrates with the Oracle's database's security features, which provide the most advanced security available within corporate networks.

Oracle's Secure Network Services incorporates leading encryption capabilities and advanced systems for authenticating users and ensuring data integrity.

Moreover, the software company says it has worked with eight top firewall vendors to pass fully encrypted data through corporate firewalls, providing end-to-end security from intranet to Internet.

Oracle and VeriFone say they expect actively to market their product through the companies' substantial existing sales channels in the US and internationally. Oracle also says it intends to make Internet commerce functionality a feature of Oracle WebServer by packaging VeriFone's virtual point-of-sale technology as "modules for the WebServer."

Oracle is not the only company pioneering such technologies. In late March, network market leader Novell announced that it was licensing technology from Open Market to "enable a new generation of electronic commerce

solutions for intranets and the Internet."

Novell will integrate Open Market's OM-SecureLink technology with NetWare to provide customers with a what the two companies say is a high-performance, cost-effective solution for establishing and maintaining online storefronts and managing electronic transactions on the World Wide Web.

According to Gary Eichhorn, president and chief executive of Open Market, there is a huge demand for this kind of software in corporations - many of which are grappling with the question of just how they will use the Internet/intranet opportunity.

"There has been a transition - starting over the past couple of months - from publishing everything (on the Web) to realizing that it is costing you to do so," he says. "It turns out to be a big cost-centre for lots of people."

Eichhorn says the real opportunity lies not in simply publishing vast amounts of data on corporate Web pages, but on using the Internet and a vehicle for real, live commerce. "With commerce on the Net, the incremental cost of distribution is zero," he suggests. "So it should have a profound impact on cost structures - the Internet will have to be used as an expense and will be something which can get a return."

Motor industry

Simulation solves a problem for Ford

The computer services company, Hoskyns - part of Cap Gemini Seged - and a leader in the IT outsourcing sector, is also heavily involved in applying virtual reality and simulation techniques in the manufacturing industry. The company claims to have the largest management science team in Europe - 150 people - following its absorption of operational research staff from British Coal and British Gas.

Cindy Greener, Hoskyns' marketing manager, emphasises that manufacturers are now increasingly aware of the need to apply new methods to the entire supply chain - from production to distribution and marketing - and not, as in the past, isolating sections of the manufacturing process.

As an example of simulation being used to solve production



Cindy Greener has moved from welder and fitter to factory manager and is now a strategic marketer

problems, she refers to a project carried out by Hoskyns last year for Ford, to improve coordination of launches for new cars across Europe.

With cars produced at three assembly plants and sold across 19 countries, via hundreds of dealers, the launch problem was "like solving a multi-dimensional Rubik cube," says Geoffrey Carr, Ford's director of programming and distribution.

Hoskyns used computer-simulation techniques to develop a 'launch machine' to replace a manual process. The system was used for the launch of the new Fiesta and more recently, the new Mondeo.

Mr Carr says the system "gives plans which are significantly superior in matching demand to supply. By automating and speeding up the process, it played a key role in keeping us on schedule."

This integration of manufacturing and marketing reflects Cindy Greener's own career profile: she started work as a welder and fitter - and rose to the position of factory manager - before taking her MBA degree and switching to a career in strategic marketing.



Brokers on the Frankfurt Bourse. In a quote-driven system, market makers must advertise fixed prices on the quote management system, available simultaneously to all users. Brokers then telephone to trade.

Pan-European stock exchange development . . . By Niala Moran

Easdaq opts for IT outsourcing

More than three dozen investment banks and broker/dealers have so far said they will operate on Easdaq, the European Association of Securities Dealers Automated Quotation system, regulated by the Belgian banking authorities

Deep in London's Docklands, the computer systems for a new stock exchange are under development. But instead of armies of analysts and programmers and resources of tens of millions of pounds, Easdaq, the pan-European exchange - which is due to open in September - has one freelancer and a tiny budget.

Rather than setting up and running its own systems, Easdaq has opted to outsource both development and operations - "we are not financed for the indulgence of build-your-own systems," says Mick Newman, who is managing the project.

In the 1980s, Mr Newman was architect of the London Stock Exchange's Topic information system, and Seag, the first automatic quotation system in the world.

"When I look back - when Topic and Seag were built, there was no choice but to do-it-yourself," he observes. "But the IT industry has now matured, and there is a wide range of technology and services to choose from."

Easdaq, the European Association of Securities Dealers Automated Quotation, will piggy-back the Eurobond dealing system operated by ISMA (International Securities Market Association), and the cross-border settlement system, InterSettle, run by a consortium of Swiss banks.

Mr Newman is in discussion with information providers such as Reuters, Teletext and Bloomberg, on disseminating price and company information from Easdaq, to investors.

The new exchange, modelled on the US market Nasdaq, will specialise in small, fast-growing, and particularly technology-based companies. Such companies find it hard to meet listing rules of Europe's main national stock exchanges, for example, having traded for three years, or being in profit.

More than three dozen investment banks and broker/dealers have so far said they will operate on Easdaq. The exchange hopes to list about 50 companies in its first year, starting by giving dual listing to 20 or so European companies that are already traded on Nasdaq.

Easdaq is an independent company with more than 40 shareholders - investment banks, stock brokers and venture capitalists - from around Europe and the US.

While it is independent of any European exchange, Easdaq has developed a close relationship with its US counterpart Nasdaq, which is a shareholder. It is also expected that some US companies listed on Nasdaq will list on Easdaq as well.

Having ruled out developing its own system on the grounds of cost and time-scale, Easdaq considered three options: Constructing a system from standard off the shelf elements; Copying an existing system; Or forging an alliance with another stock exchange.

The first two options were rejected because of the amount of modification any off the shelf or existing system would have required.

A strategic alliance with another stock exchange was ruled out as being too complicated. However, ISMA stood out as a potential partner, because its system provides trade matching, a crucial requirement as the Easdaq screen-based system will be quote driven. ISMA has agreed to develop and operate a quotation system for Easdaq, which sit on top ISMA's Trax trading system.

At the same time, the real-time trade confirmation and reporting systems within Trax



IT skills and outsourcing

Focus on applications in the financial sector

will be enhanced to match Easdaq's regulatory requirements. Market-makers and brokers on Easdaq will have to be wired into the Trax network, and to install the Trax software, which will run on any workstation capable of running Microsoft's Windows NT operating system.

In a quote-driven system, market makers must advertise fixed prices on the quote management system; these are all available simultaneously to anyone using the system. Brokers then telephone to trade. Both parties send details of their transaction to the trade reporting system, which matches up the two reports and forwards them for settlement. The quote management system will feed prices to investors via information providers such as Reuters or Teletext.

On Easdaq's behalf, the existing network will be extended to bring in brokers and market makers from the US, and other parts of Europe, such as Scandinavia and Spain and Portugal, that are not covered presently by ISMA.

Work is progressing by ISMA and InterSettle to make the connection between their networks to allow information on trades to be forwarded to the InterSettle computer, based in Zurich. The settlement system will reinforce the telephone trade, advising brokers when a trade will be settled, and what it will cost.

In the absence of a single European currency, Easdaq will allow all European currencies and US dollars to be used

within the system. The InterSettle system is capable of settling any trades that take place before 1400 hours, on the same day.

Although Mr Newman said this would be important in competitive positioning, Easdaq will initially opt for three-day settlement. All transactions will then be stored in a database, which ISMA is also setting up, for record-keeping and archiving.

The headquarters of Easdaq is in Brussels, and the exchange will be regulated by the Belgian banking authorities. Information from the database will be used to demonstrate compliance - "obviously, we will also collaborate with any authority, for example, the US Securities and Exchange Commission if they request information on any brokers or market makers," says Mr Newman.

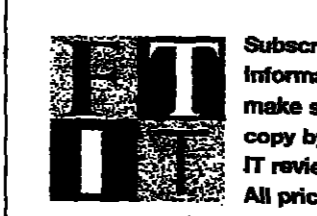
The database will also feed the only element of the system that Easdaq plans to develop and operate itself, the market surveillance system to enable it to ensure that the market is operating correctly.

Mr Newman is now bringing together a handful of participants: market-makers, brokers, information providers and investors, to trial the system and get an understanding of the training and installation requirements. At the moment, the paucity of research and analysis on small, high-growth companies in Europe creates a barrier for would-be investors.

One of the keys to Easdaq's success will be to encourage analyst coverage. Easdaq intends to outsource the dissemination of such information, and to set up a channel for listed companies to publicise their reports. Companies will be required to file quarterly.

Easdaq does not say how much it is spending on its computer systems. But it has said it needs Ecu 10m (£7.87m) to finance all activities for the next four years when, according to the business plan, the exchange will move into profit. Compare this figure to the £50m or so the London Stock Exchange is estimated to have poured into the failed Taurus computer project, and - as Mr Newman says - building your own system does indeed look like an indulgence.

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Software at work

Management overview

Don't put your profits at risk

Risk assessment software is not merely for big financial institutions. Organisations of all sizes should be using it, argues Rod Newing

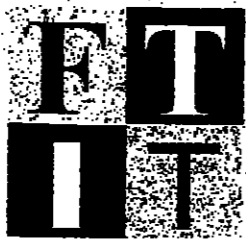
Risk analysis is "one of the elements by which the natural uncertainties in human life are adequately modelled," says Grenville Crill, a decision-support consultant.

"Management has spent the last ten years getting to grips with spreadsheets and how to use them in business. During the next ten years they will learn how to incorporate uncertainty into their models and improve them as a result."

The financial losses at Barings and Daiwa have shown that even large institutions have had inadequate risk management systems and they are now giving it a high priority. However, the need for software to provide risk analysis and management applies to all organisations.

Most management decisions are taken on the basis of a single anticipated outcome, whether a discounted cash flow, pay-back or forecast. Managers have become used to spreadsheets and their ability to provide a single line forecast from a number of different variables. However, there is always a degree of uncertainty about the outcome, called "risk".

There is always a chance of an unanticipated outcome which carries a financial loss, which would not be reflected in the forecast. "Failure to acknowledge the existence of



Software at Work

RISK MANAGEMENT SYSTEMS: Now one of the fastest-growing segments of IT-spending in the financial world

uncertainty is one of the reasons why major projects are late, over-budget or desperately hard work," says Mr Crill.

To make more informed decisions, managers need to know both the probability of an outcome and the extent of any associated loss.

Having made the decision, managers are then able to take steps to reduce the probability of loss and control their exposure to it. Risk assessment



A tightrope walk that failed: in 1971, near London's Tower Bridge, Cologne 'spider man' Franz Joseph Burbach, hoping to raise funds for charity, dropped his damaged balancing pole and decided to crawl across, but then fell into the Thames, half way over. In the financial world, uncertainty over risk is one of the reasons why significant projects are late, over-budget or sheer hard work.

software handles all the complex calculations required to calculate the range of possible outcomes.

Software packages use a series of different techniques, including Monte Carlo analysis, which calculates a large volume of random outcomes. Latin Hypercube, which calculates relationships between variables, deterministic formulae, which are repeatedly applied to individual values

and qualitative tools, often based on questionnaires.

The entry cost of risk assessment software, either as a spreadsheet add-in or a stand-alone package, starts at about \$500. Crystal Ball, @Risk and Predict! are popular easy to use packages which are suitable for managers, project managers, accountants and other non-technical end users. However, PA Consulting's Colin Hatfield warns that "risk

software does not currently support pro-active risk management after it has been assessed".

There are a number of small specialist risk management consultancy companies. Because of the specialist nature of the market, several of them either import suitable software or have written their own, although they all use another package if it is more appropriate.

At the higher end, global financial institutions can easily spend from \$20m up to as much as \$100m. At this level, the software only represents about ten percent of the cost, with the rest being taken up with integration. The top-end software vendors are producing cut-down versions of their software for non-financial markets.

Risk analysis is required during the bid and execution phases of all significant defence and most of the larger civilian construction projects.

"Suppliers have to include a risk assessment in their bids,

which would be continued as part of the project," says Andy Carty, head of Information Management at the UK Government Central Computer and Telecommunications Agency.

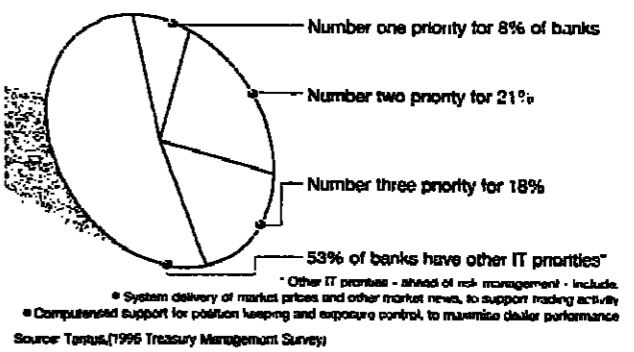
"Departments usually do their own independent risk assessment and, for software, we refer them to the Association of Project Managers.

Managers need to know the probability of outcome and possible losses

"Risk management software has matured and has embodied all the principles," says Charles Taylor, co-head of global risk management at Andersen Consulting. "The next phase of the market is getting managers to think about risk and getting best-practice disseminated."

"Large organisations need to

Risk Management as a 'top three' IT priority



Other IT priorities - ahead of risk management - include: System delivery of market prices and other market levels, to support trading activity; Completed support for position keeping and exposure control, to maintain dealer performance. Source: Tetra, (1995 Treasury Management Survey)



Back to face the music: former Barings securities trader Nick Leeson, bites his lip as he is escorted from Singapore Changi Airport. He is now serving a six-and-a-half year sentence

move from pockets of excellence to a risk culture, where everybody is thinking about risk in the same way and understanding the risk preferences of their organisation." In the UK, "banks are not booking enough risk, so they are turning away profitable business," comments Chris Hoyland, managing director of statistical decisions. "The margin on high volume transactions, on which the interest rate cannot be adjusted, is about 14 percent. Operating and marketing costs are 3-5 percent and losses about 2 percent. They shouldn't be turning away one in three customers with such a high net revenue."

"With the exception of Barclays and TSB, they haven't the numerical approach of quantifying and forecasting the consequences of their decisions. In other words, if they took more risk, they would need more collectors, but would still make more money. You can accept more risk if you plan the consequences."

Single line forecasts "are of limited value in the real world," warns Ken Newland, managing director of Quintec Associates, who is also chairman of the Association of Project Managers Specific Interest Group for Risk.

"Ninety percent of the value of software lies in communicating ideas. The numerical approach can suffer from 'garbage in, gospel out,' so it is best used in support of one of the better qualitative software packages, which can capture the thinking processes."

Used properly, risk analysis software will alert and educate managers to the risks involved, and allow them to make better decisions and control the subsequent risk.

"If you can manage your risk, you conserve capital with which to expand and grow," says Mr Taylor. "Good risk management practices stabilise returns and go straight to shareholder value."

□ Rod Newing MBA FCA FirstD is a specialist writer on executive computing (newing@cx.computink.co.uk).

Portfolio management • By George Black

Financial risk dominated the headlines early last year, following the collapse of Barings Bank, but today market risk and credit risk remain much bigger concerns for most financial firms.

Credit risk has become less important than market risk in the City of London since the Big Bang of 1986 broadened the activities of most of the larger financial institutions, but it remains a substantial area of concern.

While City banks inevitably focus keenly on the financial problems of large international projects, such as the Channel Tunnel, they are also keenly involved with troubles on a smaller scale: for example, the UK's clearing banks are increasingly worried by the number of struggling, medium-sized businesses. The banks are boosting their efforts to tackle potential bad debts. A group of national reserve banks recently issued a reminder about the need to control credit tightly.

Joint project

In response to this situation, the UK merchant bank Kleinwort Benson, part of the German Dresdner Bank, last year introduced a system to provide a consolidated view of its exposure in loans.

A software system, called Cobra Limits, was jointly developed by the bank with CMG (Computer Management Group), the London-based systems company which

The benefits of a consolidated view

How software helps Kleinwort Benson, the merchant bank, curb credit risks

Kleinwort Benson floated on the stock market. The two have worked together for several years.

The bank looked for a software package to improve the level of management information on lending, as well as to strengthen its reporting capabilities. Not finding anything suitable, it went into partnership with CMG to develop the software.

It was spurred by the need to comply with more stringent Bank of England reporting requirements following the European Union's Capital Adequacy Directive, which came into force at the beginning of this year.

But more important, according to Mr Alan Craft, chief credit officer and a director of the bank, was the facility to manage the lending portfolio effectively from a single database. This would serve both to control serious risks and to assist marketing to those clients who might safely be encouraged to borrow more.

The system uses an Oracle database and a Business Objects query tool. Mr Craft says the new system is far easier by those who are not a

computer specialists, than the nine year-old system (developed in-house), which it replaced.

"We are starting to see the benefits now, though there are still gremlins to be sorted out," he says. "It is already much easier and quicker to



Alan Craft, chief credit officer: portfolio reports are now available far more easily easily

get the reports you want. "Most of all, it has raised the awareness of the issue of portfolio management."

However, he sees it as only one step along a long road towards creating ideal systems. Having learnt how to model the lending portfolio in various scenarios, the bank plans to link the system to a market risk system to gain an overall view of its risk position.

"Few, if any, institutions have a complete picture," Mr Craft notes. The larger US banks are probably furthest advanced in this direction, but even they do not yet have all the answers.

Applications

Eventually it may be possible for the bank to convert its risk management systems to real-time operation, cutting out even the minimal delays which occur at present. That move will depend whether the bank is willing to invest heavily in upgrading systems.

Although the Cobra Limits software was developed for Kleinwort Benson, it is broadly applicable to most lenders. CMG aims to market it as a package.

Charity application • By Rod Newing

Reassurance for supporters

A charity has used risk analysis software to ensure that an important project can be successfully funded, built and operated

SeeABILITY, previously known as the Royal School for the Blind, is raising £2.25m to build a centre to care for young people with juvenile Batten's Disease. This genetic disorder leaves sufferers blind by the age of 12, with decreasing physical ability, a short life expectancy but normal mental ability. There are no specialist facilities available in the UK for those beyond the age of 19 and the charity's new centre will provide both care and the stimulation which sufferers need and deserve.

"One of the parents who is helping with the project works at the Ministry of Defence," says David Ireland, SeeABILITY's Appeals Director. "He suggested that risk analysis would help us to present our case to potential supporters. We were introduced to HVR Consulting Services, a manage-

ment consultancy with a risk practice, who offered their services and software without charge as their contribution to the project."

"It was an interesting exercise," recalls Robert Perkins, SeeABILITY's chief executive. "HVR helped us to brainstorm the potential risks as a group. They also met with us individually and with several of our trustees and our outside project manager."

"We assessed a number of factors in terms of their probability and possible impact on timescale, capital cost and operating costs."

"We also looked at factors such as our reliance on key staff, finding a suitable site, providing a marketable service, the possibility of competing appeals in similar areas and the failure to find an effective appeals committee or even the loss of our marvellous Patron, the Princess of Wales."

Potential risks

The output from these sessions was entered into the Risk Evaluation and Management Information System ("Remis"). This is HVR's qualitative tool which is based on Microsoft's Access database. The software

captures details of the various potential risks and uses probability weightings to assess the relative importance of each.

"The software ranked the risks, which is an exercise that we couldn't have carried out," admits Mr Perkins. Remis also categorises risks by type, to identify common sources of risk. Detailed calculations are carried out using a specialist quantitative risk assessment package, such as @RISK or Monte Carlo.

Remis automatically produces a risk register and management summary. "The risk register is a running document which I keep by me," says Mr Perkins. "I use it from time to time as a check to monitor the project as it progresses. The study identifies the period of the appeal for which a particular risk is current and allocates responsibility for each to a manager. We can see when a risk has passed and when we are entering a critical phase."

"The exercise was extremely useful," says Mr Perkins. "Although it didn't pick up anything significant that we hadn't identified ourselves, it was reassuring to find that a highly professional and sophisticated approach has largely

confirmed the points we had already identified."

Using risk techniques in association with the specialist software gave the charity a powerful tool to reassure its existing and potential supporters and financial backers.

Expertise

"We can show that we understand the areas of risk associated with such an important project and that measures have been put in place to minimise both their probability and their impact," says Mr Perkins.

As a charity with expertise in the areas of visual impairment and multiple disability, the group, he adds, "is faced with a clear responsibility to those suffering from juvenile Batten's Disease and their families. There's no alternative - we must take every step to ensure that the centre does not fail".

□ For more details about SeeABILITY, telephone 01372 373096, fax 01372 361508.

□ Next month's software theme in the FT-IT Review, published on July 3, will look at Internet software tools.

□ The September 4 issue will feature developments in accountancy packages.



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Exhibition scene • By Rod Newing

Small is beautiful when it comes to selling software

Both software buyers and vendors are looking for a sound business proposition when they attend a software event. Hugh Keeble explains why he believes 'Softworld' and 'SoftEx' events give visitors what big shows cannot provide

Events must be an information service for attendees, "not an annual jamboree for the industry," says Hugh Keeble, founder of the Interactive Group, which organises a series of software events.

"You have to get the fundamental proposition right. Major exhibitions are often organised at the convenience of vendors and the organisers, not for end-users or software specifiers."

Mr Keeble used to be the director responsible for the now defunct Which Computer? Show, the biggest IT event ever to be staged in the UK. It was half as big again as Networks, currently the UK's largest IT exhibition.

"An estimated 88 per cent of attendees at major computer shows were looking for application software, but an exhibition is not the best environment for selling software. You need to spend time with a specialist marketing person, but they are never available. Software is a complex product, whereas an exhibition is a five minute lead-taking exercise, so 90 per cent of attendees didn't find what they were looking for."

The Which Computer? show was launched in 1984, at about the same time as the IBM PC. "It was a very successful flag-waving exercise for the IT industry in UK," recalls Mr Keeble. "Vendors took the view that the size of their stand was a reflection of their UK market share - and marketing managers were under pressure to build the biggest and the best stand."

This, he adds, was acceptable when the margins on PCs were "incredibly high, but the clone market took off and PC prices came down. Marketing man-

ers were asked to justify their investment in the stand, so four or five major vendors dropped out and the whole show collapsed. I believe that the Networks show will go through the same experience."

Mr Keeble proposed a series of small focused software shows to Reed Exhibitions, but they were not interested because their strategy was to concentrate on large market-leading events. Together with Mark Steel, another Reed director, he left to set up the Interactive Group. Their mission was to provide software selection services which would assist groups of people in an organisation to buy serious business applications.

"We created the Softworld series to provide an environment in which a team, often consisting of the financial director, IT director and senior department head, can identify suitable products in advance, review them in a time efficient way and come to a final shortlist of one or two vendors," Mr Keeble explains. The vendors have small standard exhibition stands and seminar rooms in which they can present their product on the hour, every hour. Attendees are given a directory containing detailed market research and factual information about both vendors and their products.

Exhibition space is traditionally sold through brochures, but interactive used direct selling. "We had a 95 per cent conversion rate because the vendors understood what we are trying to achieve," says Mr Keeble. "We didn't try to sell them additional services, such as PR and corporate image, but concentrated on sales opportunities. We took away the large stands and created a level

east and west coasts, as well as Chicago. Interactive is now in the process of franchising Softworld in Europe and the Far East. Interactive currently organises 17 software buying events 23 Masterclasses, 5 conferences and 14 research reports and directories, on paper and CD-ROM. An software information service is being constructed at <http://www.softinfo.com>. Interactive Group, tel: 44 (0)181 540 5040 or softworld@softinfo.com



Keeble: "Software events must be more innovative"

playing field. This encouraged smaller vendors with good products who had dropped out of the Which Computer? show because they couldn't compete on budget."

By offering a return on investment, "we won the hearts and budgets of vendors. Participation may only cost £4,000 and companies such as Oracle can present to 400 people, which is a good business proposition. All our vendors are coming back because they are getting most of their business from our events, which now become their main marketing tool. We also had an incredibly positive reaction from users, with 87 per cent attending seminars and 92 per cent rating the directories as good or excellent."

UK attendances grew quickly, but soon stabilised at about 3,000 per event, so Interactive expanded into the US in 1993 under the 'SoftEx' brand.

"It is like the UK market ten years ago, with several big broad-based shows, but nobody was offering the opportunity to review software. We leveraged our UK vendor contacts and arrived in the US with a list of UK colleagues who would act as references."

Mr Keeble finds that US executives are better event attendees than the British: "Most of them arrive the night before and stay at the venue to attend both days. You have to be committed to sit through three or four presentations when there are no freebies, no gifts and no glamour. It is very workmanlike. They are more sophisticated in understanding what software can deliver and selling software is easier because BPR and IT are an

accepted part of their culture." The regionality of the US market offers a huge potential to organisers who can stage events on both the east and west coasts, as well as central US. "The resource drain of setting up events from scratch is massive and we are the only UK organiser to do it successfully in US. It is an achievement we are proud of," he adds.

Mr Keeble sees the Interactive Group as becoming the leading global provider of information in all media to software buyers. He wants to give detailed information on software purchases in a time-effective and conducive environment - "our directories, which are sold to non-attendees, now account for 30 per cent of the business our vendors get. It is the reference manual for the market". He is defensive when it is suggested that he has changed the shape of IT events in the UK, where software presentations have now become an established

part of the timetable. "There is a fundamental cultural difference between us and other event organisers," he explains. "We are offering the best environment, which is why whole teams attend. Others are adding seminars to exhibitions with large stands and are not focused on offering a proposition to attendees, so their proposition is still an exhibition. Our seminar pre-booking service gives the proposition that we won't waste attendees time."

Considering the recent Comdex exhibition in London with the far larger Comdex event in the US, he says: "Comdex in Las Vegas is a one-time/one-place proposition to attendees. It attracts a worldwide attendance because it provides a worldwide stage for product launches, announcements and innovations. Attendees expect the same experience in the UK, but it is impossible to deliver it locally, so their proposition at local level is flawed. However, they did make a big effort and investment."

The exhibition market, in general, must change, Mr Keeble believes. "The industry has the reputation of being a parasite. Vendors have to be there because their competitors are there. All too often organisers have launched exhibitions by choosing a banner and simply asking vendors to stand under it, without considering the fundamental proposition to the potential attendee."

The whole market should be more sophisticated and services should be provided 365 days a year. New electronic methods such as the World Wide Web and CD-Roms pose a fundamental threat to the industry because they provide detailed product information to people's desks.

"Events must be designed with the attendee in mind, not the vendor. We are trying to retain the face-to-face contact at our events, because buyers react to the vendors as people, but there is a balance. The event industry must lead and innovate, just as the software market does."

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As businesses increasingly depend on IT systems, Dr Geoff Robinson, right, president of the British Computer Society, says IT staff need to be more involved with professional bodies

IT staff recruitment • By John Kavanagh

Risk factor sparks a keener interest in IT qualifications

Business insurers are now looking for proven competence of IT staff when assessing risks and considering cover for industry and commerce

When the ability to get business insurance cover starts depending on the proven quality of IT staff, it is clear that formal qualifications are becoming rather more than just paper certificates.

This is just one of several developments in the last six months which have brought new interest in qualifications from both companies and individuals and sparked off hectic activity among professional bodies and training companies to accommodate the demand.

The biggest practical impetus for companies could be the action of an insurance broker, which wishes to remain unnamed for now, in reviewing its procedures for assessing risk on installations such as oil rigs and industrial plants. As part of this review it has been looking at examining the qualifications and quality of the IT staff developing the systems which control such plant.

Mr Philip Virgo, an independent consultant who was approached by the broker for advice, says others are taking a close interest in the development. "IT insurance companies start taking this line on safety-critical systems, the whole attitude towards qualifications and professional bodies could change," says Mr Virgo. "They might start looking at the definition of a critical system: could it include certain business systems? Insurers might start looking at IT staff competence when considering cover against fraud, for example."

Other pressures are also at work here. The Health and Safety Executive is funding research to formally define the skills needed by staff developing safety-critical systems. The project is being managed by

two professional bodies, the Institution of Electrical Engineers and the British Computer Society. They say there is "a widely perceived need for a single coherent scheme of wide application".

This statement has some justification: more than 40 organisations showed interest when the two bodies invited bids for the contract to draw up detailed lists of skills.

Qualifications are already an immediately pressing concern for some: the insurance group, General Accident, has told its 300 IT staff that promotion will depend on professional qualifications after 1998.

This new policy is part of the drive by the insurance industry as a whole to promote professionalism, under pressure from regulatory bodies: General Accident says the move is "part of a company-wide commitment to developing employee skills and organisational professionalism".

This, says IT training co-ordinator Mr Gary Smith, is "perhaps not something the IT sector would have driven off its own bat, but we believe the industry as a whole should be looking at how it is positioned among other professions".

Staff seeking career progression in the company have to work towards the professional membership grades of the British Computer Society or the Institute of Data Processing Management. Professional membership of the Association of Project Managers or the Chartered Insurance Institute might be an appropriate alternative for certain individuals. By 1999, staff seeking career progression will have to complete this process, or be "well on the way".

Mr Smith says that staff reaction has been positive: "Although the target date is still three years away, we are encouraged by the number of membership applications already being made."

The company is now looking at ways to help staff gain the necessary professional experience and training and work towards the examinations. The National Health Service



is not openly going as far as General Accident in tying qualifications to promotion but, even so, it does say its new diploma and advanced diploma in IT are "part of a drive for more structured recruitment, development and career planning, and a framework for personal development".

The diploma scheme has been put together by the NHS Information Management Group, the Training Division, the Open University and the Association for Health IT Specialists, a staff representative group. More than 5,000 staff are being encouraged to work for the diplomas, which are at second-year and third-year undergraduate level. There is no course or examination: candidates compile evidence and have an interview to show they have reached specified standards in areas ranging from IT to change management and personal skills.

Such developments are coming at a time when companies are using the experiences of the recession to move increasingly to flexible employment methods, such as fixed-term contracts, getting employees to take responsibility for their own career development, and bringing in contract staff for system projects rather than recruiting permanent people.

These trends mean that both individuals and employers need to get more involved with professional bodies, according to Dr Geoff Robinson, director of IBM's Hursley Research Laboratory and president of the British Computer Society.

"IT professionals are now realising the benefits of transferable skills and professional qualifications," he says. "In accounting and law, this has been the pattern for years and it is becoming increasingly relevant in IT, where the idea of

lifetime employment is now perhaps behind us. Dr Robinson says employers should encourage their staff to become involved with a professional body, for the good of all: "Employers, too, need transferable skills, and external qualifications can play a large part in their skills armoury."

The society is making it simpler for experienced people to achieve its professional grades: this and other efforts have brought a rare net increase in membership from 34,000 to 35,000 in the last year. Even so, it still represents only around 10-15 per cent of IT staff. The Institute of Data Processing Management has 10,000 members, some belong to both bodies.

There is a historical image problem here. According to Dr John Elmore, IT director at ICL and chairman of a project at the Institution of Electrical Engineers (IEE) aimed at finding out what IT people want.

The IEE has surveyed 1,500 IT specialists and found that they want to be seen as professionals and want standards, codes of practice and formal ways to keep their knowledge up to date.

But Dr Elmore says they also see the professional bodies as too academic and insisting on engineering degrees. The IEE is now looking at ways to overcome the perception problems and build on the new desire among staff to be seen and to behave as professionals. The British Computer Society is in touch with this activity.

The time is certainly right for such work, for the developments of the last six months suggest that individuals' career prospects and even business survival will increasingly depend on IT qualifications.

International software events

The Interactive Group launched the Softworld series of events in the UK in 1991. It includes Sales and Marketing, Accounting and Finance, Human Resources and Personnel Management and Supply Chain Management. Interactive also organises DBWorld, SoftDev, Java Developers Academy, Intranet 97, Delphi Developers Academy and Microsoft's Visual Developers Academy. In the US, the SoftEx series cover similar subjects as Softworld and are based on the

east and west coasts, as well as Chicago. Interactive is now in the process of franchising Softworld in Europe and the Far East. Interactive currently organises 17 software buying events 23 Masterclasses, 5 conferences and 14 research reports and directories, on paper and CD-ROM. An software information service is being constructed at <http://www.softinfo.com>. Interactive Group, tel: 44 (0)181 540 5040 or softworld@softinfo.com

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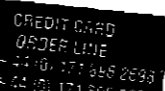
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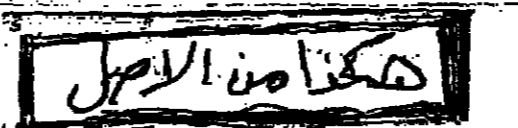
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Applications
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Coverage
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Applications:
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Fax: +44(0)127682250

Company Description
PACIFIC is a computer systems integration company specialising in building and implementing bespoke software solutions across a variety of platforms and industries. We have particular skills in client/server development, workgroup computing, systems integration, networking, facilities management, automated operations, decision support solutions and data warehousing.

Hardware
AS/400
PC LANs
UNIX

Coverage
International

PACIFIC

34 Powerhouse Communications Plc
21 Woodthorpe Road
Ashford, Middx. TW15 2RP

Do you want to join the leading businesses using Computer Telephone Integration to improve the efficiency of your organisation and customer service?

The Y'n-D-x is the UK's leading integrated platform for voice, data and CTI.

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Computer Telephone Integration

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FT-IT DIRECTORY • FT-IT DIRECTORY • FT-IT DIRECTORY • FT-IT DIRECTORY

36 Data & Document Capture
37 Data Security
38 Data Security Solutions
39 Dealing Room Systems
40 Document & Data Management

36 OPEN 4 Systems Ltd
Amdale House, Otley Rd, Headingley Leeds LS6 2JU
Tel: 0113 274 9930 Fax: 0113 274 9938
Barcoding - specialists in integrating barcode technology with existing systems...

37 Fischer International
6 Beaumont Gate Radlett, Herts WD7 7AR
Tel: 01483 859119 Fax: 01923 859151
Company Description Fischer International's SafeBoot/SmartDisk and Watchdog software and token-based security solutions provide high level data protection...

38 RSC - A Storage Tek Company
Storage Tek House, Woking Business Park Albert Drive, Woking GU24 5JY
Tel: 01483 727331 Fax: 01483 727085
NSC, a Storage Tek company is a leading supplier of enterprise-wide data security products which address:

39 Team Communications
Cherter House, 13-15 Carteret Street, London SW1H 9DJ
Tel: 0171 799 3082 Fax: 0171 799 3090
DEALING ROOM SYSTEMS
As part of Hutchinson Smith Limited, one of the UK's top 5 IT consultancy and contract agencies, Team Communications provides specialist support for all aspects of Dealing Room Systems.

40 Integritas Limited
PO Box 34, Sovereigns Kent TN13 2LZ
Tel: 01732 740866 Fax: 01732 740475
Integritas provides a comprehensive service as a bureau and system integrator for complete systems, including Document Management, Data Management and Image Capture; scanning, indexing, OCR/IFR, Microfilm/Digitaliche digitisation, conversion of 9 Track, 3480/3490 etc. to chosen Media. Full audit trails for document admissibility as evidence.

41 Electronic Commerce
42 E-mail to Fax, Intranet & Internet Solutions
43-48 ERP Systems

41 Perwill EDI
Company Description PERWILL-EDI, an award winning Electronic Commerce Solution installed in over 60 countries on 6 Continents, is available from its authors in the UK.
For full details of the Perwill range of products, training and consultancy services please contact:
Perwill, 13a Market Square, Alton, Hampshire GU34 1UK, United Kingdom
Tel: +44(0) 1420 545000 Fax: +44(0) 1420 545001

42 Open Connect (UK) Ltd
Lifton House, 52-56 Buckingham Street Aylesbury HP20 2LL
Tel: 01296 330771 Fax: 01296 330983
EMAIL TO FAX - Single/Multiple Line solution for sending and receiving faxes. Compatible with MS-Mail, ccMail, HP/Compaq, HP/DeskJet. Send faxes directly from network clients via email or direct to fax server from desktop applications. Receive faxes directly to network clients or other destinations. Network client delivery requires use of ISDN facilities.
INTRANET - Comprehensive solutions developed, using Speedway Autobahn, for a complete internet internet service.
INTERNET INTEGRATION - Complete service provided from Web Site Design to Hosting Services. Services include Page Access Monitoring, Mail Handling, Ordering Systems and Electronic Catalogues.
Hardware Compatibility: HP5000, RS6000, AS4000, HP3000, WEB Servers, DEC/ALPHA
Geographical Coverage: UK

43 Baan UK Ltd
Baan House, Dearway Technology Centre, Wilmslow Rd, Handforth, Cheshire SK9 3EY
Tel: 01625 523550 Fax: 01625 523303 E-Mail: sales@baan.co.uk
Company Description Baan is a leading provider of open systems, client server based enterprise business applications used by organisations worldwide to manage company resources and co-ordinate enterprise wide functions such as sales forecasting, inventory control, procurement, distribution, transportation, finance and project management. The Baan software family is designed for rapid implementation, easy adaptation and reconfiguration in response to changing organisational needs and technological advances. Currently more than 1,000 customers are using Baan software to manage and re-engineer their businesses around the world. Customers include Boeing, Mercedes Benz, Philips, GEC, Remploy, Crown, Snap-on Tools, Northern Telecom, Honda. Baan employs more than 1,500 people in 59 countries around the world.

44 IBM AS/400 Client Server, Windows and OS/2 GUI support.
Coverage: 85 Offices in over 30 countries worldwide.
Applications: Financials, Distribution, Inventory, Asset, Service, Production, Manufacturing, Project, Warehouse Management, EIS and PMCG.

45 Baan UK Ltd
Baan House, Dearway Technology Centre, Wilmslow Rd, Handforth, Cheshire SK9 3EY
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49 Enterprise Management Systems
50 European Accounting & Business Systems

49 Cincom Systems
99 King Street, Maidenhead Berks, SL6 1DP
Tel: 01628 542302 Fax: 06128 542310
Email: mhoiden@cincom.com
Company Description Cincom is the leading worldwide supplier of business software and dedicated expertise to companies who manufacture and sell customised products - to order project or contract. We help companies to achieve and maintain global competitiveness throughout their operations. From initial prospect enquiry through proposal, quotation, to manufacture, installation and post-sales support.
Geographical Coverage: Over 60 offices worldwide

50 International Business Systems
1 Imperial Place, Epsom Way Borehamwood, Herts WD6 1JN
Tel: 0181 2075655 Fax: 0181 2076770
Company Description IBS is a wholly owned subsidiary of IBS AB, a Swedish public company and one of the leading software suppliers with over 3000 customers worldwide. The ASW Portfolio is a full range of application software with a GUI interface providing innovative solutions to today's business needs; including Pan European requirements and EuroVAT acting in a true multi currency environment.
Hardware: AS/400 Client Server, Windows and OS/2 GUI support.
Coverage: 85 Offices in over 30 countries worldwide.
Applications: Financials, Distribution, Inventory, Asset, Service, Production, Manufacturing, Project, Warehouse Management, EIS and PMCG.

46 Baan UK Ltd
Baan House, Dearway Technology Centre, Wilmslow Rd, Handforth, Cheshire SK9 3EY
Tel: 01625 523550 Fax: 01625 523303 E-Mail: sales@baan.co.uk
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47 Baan UK Ltd
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48 Baan UK Ltd
Baan House, Dearway Technology Centre, Wilmslow Rd, Handforth, Cheshire SK9 3EY
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51 Europe Online
52 Facilities Management/Outsourcing
53 Financial Systems, Reconciliation Systems
54 Finance Management
55 Internet Business Solutions

51 Europe Online
Kingsgate House, 536 Kings Road, London SW10 0TE
Tel: 0171 447 3400 Fax: 0171 447 3499
Company Description Europe Online bridges the gap between conventional online services and the Internet. The Service is designed to provide easy access to E-Mail and discussion groups, entertainment and education, travel and shopping services as well as all the latest news and current affairs from around the world.
Hardware: Windows 3.1, Windows 95
Coverage: UK, France, Germany, Luxembourg
Applications: £3.95 per month for 3 hours

52 IT Southern Limited
Southern House, Lewes Road, Brighton BN1 9PY
Tel: 01273 800444 Fax: 01273 675299
IT Southern Managed Services Partial or Complete IT FM / Outsourcing
On site or remotely, IT Southern provides complete or partial outsourcing of Mainframe, UNIX and/or PC Desktop services and support. IT Southern delivers information technology based business solutions with a clear focus on providing real value for money.
Hardware/Compatibility: ICL, IBM, SUN, Mainframe, UNIX & PCs
Applications: Bespoke of tailored existing applications
Geographical Coverage: Managed Services / Outsourcing and customer support through the UK

53 Geac Computers Limited
Hollywood Tower, Hollywood Lane, Cribbs Causeway, Bristol BS10 7TW
Tel: 0117 9509003 Fax: 0117 950718
Integrated client/server Reconciliation and Investigations System for Cash, Securities and FX Confirmation
24 hours on-line availability - WorldWide
Supports agency and/or proprietary data formats
Automatically recognises match exceptions
Creates Investigations cases
Reconciles holdings or transactions
Comprehensive MIS
Hardware: UNIX or NT, HP, IBM RS6000, SUN, Sybase, SQL, Oracle
Geographical Coverage: UK, Europe, Far East, Australia, North America
Applications: Geac WINNAR
Cost: Priced on a per concurrent user basis

54 Software 2000 UK
Crosby House, Meadowbank, Furlong Road, Bourne End, Bucks SL8 5AJ
Tel: 01828 850850 Fax: 01828 850243
Company Description Software 2000 offers a comprehensive suite of financial and human resources software designed exclusively for the IBM AS/400 server and related technologies, using client/server and object oriented technologies to provide easy-to-use icon and graphical screens and integration with popular windows spreadsheet and word processing packages and taking into account all the requirements of the multinational corporation. Software 2000 has over 1200 clients worldwide.
Hardware: IBM AS/400, Server, Client/Server - OS/2, Windows, MAC.
Geographical Coverage: UK, Mainland Europe, USA, Australasia, Asia, Sth Africa.
Applications: Totally integrated financial management & human resources
Cost: Entry Level Price £25,000

55 Register your company name on the Internet
£100 NetBenefit
http://www.domainnames.co.uk

56-57 Internet - Worldwide Web
58 Intranet
59-60 IT Services

56 Industry Connect Ltd
Stons Bridge Lane, Loxley, Sheffield S6 6SX
Tel: 0114 2852274 Fax: 0114 2852778 Email: http://www.indconnect.com
Company Description Industry Connect is a multi media communications company specialising in providing businesses with a compelling and informative presence on the WorldWide Web. We have experience in the design, creation, maintenance and management of major web sites and virtual business parks. At Industry Connect we understand the technology and will remove the jargon. Our service will quickly introduce your organisation to this exciting new communication technology cost effectively whilst tailoring the benefits to your own particular needs. Combining years of successful international sales and marketing experience our experts are committed to delivering a digital solution to suit your requirements. Our services include:
- Concept Design - Create and maintain an interactive WorldWide Web site
- Incorporate the use of: Creative Graphics Sound Interactive Forms & CGI Scripting Video
- Intranet (Internal Communications Technology) - Internet Consultancy
Geographical Coverage: Worldwide
Applications: Customer Service & Support - Sales & Marketing - Information Dissemination - Sales Promotion - Commercial Transactions - Mail Order

57 Origin
420-430 London Road, Croydon, Surrey CR9 9OR
Tel: 0181 565 1234 Fax: 0181 781 8013
Company Description Origin is a global provider of a full range of I.T. Services; it delivers technology based solutions to business needs through local centres of excellence to ensure a highly responsive and flexible service which drawing on the vast experience of a network of 11,000+ professionals across 27 countries. This breadth of support covers a range of capabilities and a proven track record from defining I.T. Strategy through to Systems Development and Implementation, Systems Management, Enterprise-wide Package Implementation and the Development of Software for in-product applications.
Geographical Coverage: Nationwide/Worldwide

58 Cabletron Systems
Network House, Newbury Business Park, London Road, Newbury, Berkshire RG13 2PZ
Tel: 01338 580000 Fax: 01338 44578
Cabletron Systems is a leading developer, manufacturer and marketer of standards-based Ethernet, Token Ring, FDDI Fast Ethernet and ATM networking solutions. Their product range also incorporates their enterprise management platform, SPECTRUM.
Cabletron's recent announcements include their SmartSwitch family of highly manageable and reliable virtual network ready switches. Their SecureFast VLAN and VNET Manager applications have been well received within the industry for their innovative approach to migrating existing networks to switched virtual internetworks.
Cabletron Systems The Complete Networking Solution

59 BUILDING CORPORATE PARTNERSHIPS
Call our sales hotline now Tel: +44 (0) 171 608 5120 Fax: +44 (0) 171 608 3091

60 National Computing Centre
Oxford House, Oxford Road, Manchester M1 7ED
Tel: 0161 242 2200 Fax: 0161 242 2400
Email: Liz.James@ncc.co.uk
Internet: http://www.ncc.co.uk
Company Description NCC is the UK's leading independent IT user member organisation and an international provider of consultancy and training services, educational and telecommunications products. Members can benefit from substantial discounts on NCC products and services and gain access to regularly updated information sources.
Hardware: Worldwide
Geographical Coverage: Available on request

61 IT Services
62 Manufacturing Control Software
63 Manufacturing, Distribution & Financial Systems
64 Manufacturing & Supply Chain Solutions
65 Network Connectivity

61 Origin
420-430 London Road, Croydon, Surrey CR9 9OR
Tel: 0181 565 1234 Fax: 0181 781 8013
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Geographical Coverage: Nationwide/Worldwide

62 Fourth Shift UK Limited
10/11 Magellan Terrace, Gatwick Road Crawley, W Sussex, RN10 2PJ
Tel: 0800 521980 Fax: 01293 538646
Fourth Shift is a leading developer of client/server applications software for the manufacturing industry. The Manufacturing Software System (MSS) is a fully integrated manufacturing control system running on PC LANs.
Hardware/Compatibility: All PCs, Windows, Microsoft NT and Novell NetWare
Geographical Coverage: Worldwide
Applications: Covers all manufacturing and process industries
Cost: Price on application

63 Radius Computer Services Ltd
Millfield House, Woodshots Meadow, The Croydon Centre, Watford, Herts WD1 8YX
Tel: 01923 255722
Company Description PointMan is a new generation enterprise system using a full Windows presentation and client/server technology. It is hardware and database independent. PointMan provides a familiar Windows interface to which users adapt with minimal training and support. It has three Highly functional modules, Customer Service, Manufacturing and Financial Management.
Hardware: Client server, MS-Windows Client, UNIX or NT Server
Geographical Coverage: UK and Euro, plus worldwide support
Applications: Manufacturing, Distribution & Finance

64 Marcom Solutions Limited
Seton House, Warwick Technology Park Gallows Hill, Warwick CV34 6DD
Tel: 01925 409999 Fax: 01925 409888
Company Description Intimate market knowledge comes from years of close working with industry leaders. For manufacturing management systems within the food/beverage, chemical/pharmaceutical sectors Marcom must always be a contender. If you recognise that your supply chain is becoming more important to your future, and your business would benefit from our industry-specific experience, you really need to investigate Marcom's approach. Contact us & let our experience assist with your production, logistic, financial & maintenance demands.

65 Thomas & Betts Ltd
Foster Ave, Woodside Park, Dunstable, LU5 5TA
Tel: 44 (0) 1582 67780 Fax: 44 (0) 1582 608816
In today's fast moving networking environment with ever increasing data speeds and new EMC legislation, your structured wiring system must meet the exacting demands placed upon it. Thomas & Betts' comprehensive range of connectivity products is designed to meet with your needs of today and those of the unforeseeable future. All you need to know about structured wiring is in our new catalogue. For your free copy, please call us now, or see us on Stand No. V17 at Networks '96.
Geographical coverage: Worldwide

66 Network Security
67 Network Systems Integration
68 Network Security Solutions
69-70 Networking

66 International Data Security
10 Allred Place, London WC1E 7EB
Tel: 0171 209222 Fax: 0171 209 2383
Company Description International Data Security is a foremost supplier of Network Security and Management Product, consultancy, training and services. Working with the DTI and BSI on the establishment of BS7799 as an acknowledged Code of Best Practice for Information Security and acting as the agent for McAfee in the UK in the verification of anti-virus products under the ITSEC criteria. The International Data Security group of companies embraces an active research and development organisation, based in the US, who are working with the major network operating system companies to bring high level C2/ITSEC E3 security to the workstation.
Geographical Coverage: UK with sister companies in US and South Africa
Applications: Various LAN Network Security and Management

67 LanBase Pic
Pipers Court, Thatcham Berkshire RG19 4ER
Tel: 01635 677977 Fax: 01635 677543
Email: info@lanbase.co.uk
Company Description As a specialist Network Systems Integrator, LanBase designs, installs and supports Local and Wide Area Networks. Combining technical expertise with Project Management skills and a unique range of products, LanBase provides flexible, technologically advanced network infrastructures. LanBase became the first direct Bay Networks partner to be both ISO9001 accredited and verified by Bay Networks as an Enterprise Solutions Partner (ESP) in Europe.
Coverage: UK, Spain and Iberia

68 Security Dynamics Technologies Inc
Monarch House, Waterford Way Wokingham, Berks RG40 2AR
Tel: 01734 795822 Fax: 01734 795833
Company Description Security Dynamics Technologies Inc., founded in 1984, rapidly earned leadership position with the development of their crackproof SecurID user identification and authentication technology. Security Dynamics now has the de facto standard for authentication and encryption technology (through an acquisition with RSA). Many vendors (now over 40) such as Novell, Oracle and Microsoft utilise Security Dynamics software in their major product ranges. Security Dynamics provides total security solutions for remote access, Internet and LAN/WAN access with over 1 million customers using the SecurID token.
Geographical Coverage: UK, UMEA, Far East, USA
Cost: Available on request

69 Emulex Europe Ltd
Mulberry Business Park, Fishponds Road Wokingham, Berkshire RG41 2GY
Tel: 01734 772929 Fax: 01734 773237
Emulex is a leading US manufacturer of network access products. These LAN and WAN Solutions include network printer servers, wide area network adapters and remote access servers. Emulex is a technology leader in fibre channel, an emerging high performance industry standard storage and network interface which is being adopted by major computer vendors.
Hardware/Compatibility: Emulex solutions are compatible with the leading network OPS protocols including TCP/IP, IPX, APPLE TALK, NETBIOS, LAT
Geographical coverage: Emulex has sales offices in the USA, Asia and the Pacific Rim
Applications: Novell WAN routing and remote access of networks
Cost: Emulex offers market leadership in value for money

70 Mod-Tap Limited
7 Northbrook Industrial Estate Vincent Ave, Southampton SO16 6PB
Tel: 01703 701919 Fax: 01703 702147
Mod-Tap manufactures an enhanced structured cabling system for both voice and data applications. The mod-tap system is modular, facilitating the integration of UTP, STP and fibre optic transmission technologies. Mod-Tap registered installations have a 15 year system warranty and a lifetime product guarantee. Mod-Tap is a multi-company. Mod-Tap systems are compliant to industry standards.
Hardware/Compatibility: ISO11801/EN50173 Class D/EIA568 and EIA TSB'S 36, 40 and 40A
Coverage: International
Applications: International Structured Cabling
Cost: Mod-Tap stand number MSO at Networks

Handwritten signature or note at the bottom of the page.

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71 Networking Enclosures

71 Rittal Limited
 Braithwell Way,
 Hebbaby, Rotherham S66 8QY
 Tel: 01709 704000 Fax: 01709 701217

Company Description
 Rittal is the worlds largest enclosure manufacturer. Among the products is a comprehensive range of enclosures and accessories designed for the Datacomms/Networking industry. Enclosures for wall mounting or floor standing for equipment or cabling use most various standards. A 5 day configuration and siting service is available.

Geographical Coverage
 The world

Applications
 All networking/Communications



72 Networking Products & Services

73-75 Networking Solutions & Internet Software

72 Cray Communications
 Caxton Way, Westford Business Park
 Westford, Herts WD1 8XH
 Tel: 01923 259259 Fax: 01923 252620

Company Description
 Cray Communications designs and manufactures a range of networking technologies including high speed switching, routing, and voice and data integration. With a wide range of experience, Cray Communications has the proven ability to integrate these technologies into a single enterprise-wide network.

Hardware Compatibility
 Products comply with Industry Standards

Geographical Coverage
 Cray Communications has 55 sales offices in five continents and employs over 2,900 people worldwide.

Applications
 As local and wide area networks converge, organisations require a single, enterprise-wide network that will provide transmission of voice, data and image. Cost dependent on size of network.



73 LanOptics Plc
 75 Thamesbourne Lodge, Station Road, Bourne End, Bucks, SL8 5QH
 Tel: 01628 533433 Fax: 01628 532252


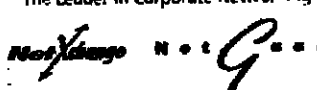
LanOptics
 LanOptics offer high quality networking systems to improve LAN/WAN connectivity for token ring, Ethernet and AS/400 midrange systems. The product portfolio includes hubs, switches, ATM technology and integrated hub/router (Cisco IOS 2500) combinations for Remote Access and enterprise wide network management systems.

NetGuard
 NetGuard, a LanOptics company, introduces the Guardian, an internet firewall. Unlike most firewall systems, Guardian provides network managers with the ability to restrict user access to all or parts of the various services available on the net. In addition, time limits can be applied to access. NT version is now available.

NetXchange
 NetXchange, a LanOptics company offers a unique fax exchange system for the Internet. The Internet Fax Exchange enables integration with uniform messaging applications such as for voice or E-mail. It is designed for the integration of fax services into Uniform Messaging platforms and is compatible with MAP1, Windows and Windows 95.

Geographical Coverage
 Global

Applications
 LAN & WAN Infrastructure

76 Object Oriented Application Development Environment

76 Data Access UK Ltd
 Lonset House, Prince Lane, London W10 3LU
 Tel: 0181 3622424 Fax: 0181 3622445
 E-Mail: marcomuk@dataaccess.com

DataFlex is a complete application development environment with all the tools needed in a single, integrated package. DataFlex combines a procedural and an object oriented 4GL, Application Generator, RDBMS, and a complete set of built-in productivity enhancing tools, including a powerful OO Application Framework.

Visit us at stand 7A78 at Software Development '96 on June 25th to 27th at the NEC and see the power of DataFlex for yourself. Call us on 0181 3622424 for pre-registered tickets.

Hardware/Compatibility PC DOS, OS/2, Windows, Windows 95, Windows NT, UNIX

Geographical Coverage World-wide UK

distributors: DATOS 01782 362002 / Informa Tech 0141 564185 / MSG (Cardiff) 01222 235244 / Unicorn 0181 7428055



77-84 Power Protection

85 Holland House B.V.
 P.O. Box 3000, Waterkampweg 1
 5300 ZX 8140EL, The Netherlands
 Tel: +31 (418) 673000 Fax: +31 (418) 673080

Holland House with its flagship product UNISPOOL, is the leading supplier of integrated distributed output management solutions for heterogeneous enterprise networks. It encapsulates all major components in the areas of network-wide output file transfer, fully automated operations, output file viewing and processing, integrated electronic forms and processing and more.....

Platforms supported: MPE/iX, HP-UX, OpenVMS, Ultrix, Digital Unix, AIX, SCO-Unix, Solaris 2, Slink, Windows NT, Windows, Win95, Novell and OS/2 LANManager

Geographical coverage Worldwide

85 Output Management Solutions

77 InvertoMatic Victron (IMV)
 84

UK office: IMV Victron UK Ltd, f.a.o. Paul Fletcher
 Tel +44 1455 618 666 Fax +44 1455 611 446

Headquarters: Sales5@Victron.nl

Could we be the first insurance company to present ourselves in the IT guide of the Financial Times? That is our - IMVs - business. Our customers are organisations of all sizes and nationalities who want to insure their companies against productivity & data loss stemming from power failures. Known to you would be UNITED NATIONS, INTEL, MOTOROLA, MIDLANDS ELECTRICITY BOARD, ABB, SIEMENS, AT&T, MERCURY COMMUNICATIONS, CENTRAL BANK OF GIB, BANK OF ENGLAND, COCA-COLA, CIBA-GEIGY, HEWLETT-PACKARD, IBM, DELL, REUTERS, SHELL, HEINEKEN, MERCEDES-BENZ, to name a few of them.

IMV is the result of the 1995 merger between Netherlands based Victron and Switzerland based InvertoMatic. Victron's expertise is high performance uninterruptible power supplies in the low and medium power range, and the integration of these systems in computer environments. InvertoMatic's expertise is big uninterrupted power systems for applications with very high cost of downtime.


We like to see our company as a tree: alive, and with a strong hidden base. The roots are most valuable, with customer support, service infrastructure, technology expertise, and logistical facilities as its major components. Suited to protect from single modems until the complete lighting of an airport landing-strip, the product range is the trunk. The leaves, numerous and constantly renewed, are constituted by the many software versions needed to integrate systems in (managed) networks, and the small adaptations needed to suit projects demands. Roots, trunk and leaves evolve at their own speed as a response to a changing environment. Some customers buy from us because we have an effective solution for handling power failures in environments with Client/Server architectures, where our PowerFlag software can avoid frustrating domino effects. Others do so because of the unmatched reliability of our products even in the most hostile environments. Others still, do so because of the excellent value for money we offer and the wide spectrum of solutions available. We feel privileged to have our customers. We work hard to allow each to be satisfied with high uptime performance and to be comfortable without the worry of unneeded systems crashes.

Safe and managed power is our business. If you have an interest in uninterrupted power as well, please contact us in the UK. Please E-mail us for inquiries on the continent.

Compatibility
 SNMP version 1&2; WINDOWS NT, 95, 3.11, 3.1; UNIX major vendors; NOVELL 2.x, 3.x, 4.x; AS/400; Mac System; OS/2.

Geographical coverage
 Subsidiaries in UK, France, Netherlands, Switzerland, Italy, Spain, Germany, Thailand, Singapore, Hong-Kong, Greece; Sales, service and support in all 220-240 V countries including developing countries.

Applications
 Distributed computing, Computer room, Telecom (billing and transport), Industry, Facility Management.




86 Outsourcing

86 CSI (Computing Services for Industry)
 Canal Place
 Leeds LS12 2DU
 Tel: 0345 010105 Fax: 0113 243 6950

CSI Outsourcing specialises in providing high quality, fully managed systems for companies using IBM midrange equipment for key business applications. Service levels to systems users are guaranteed. Services can be based on customer's site or at a CSI location and provided 24 hrs 365 days a year.

Hardware/Compatibility AS/400 Ops, Applications, Tech support, LANs, WANs, Desk-top

Geographical Coverage Services from Datacentre in Nottingham and eight other UK locations



87 Project Management Software

88 Project & Risk Management Software

89 Software Development

90 Software Development & Maintenance

87 Welcom Software
 Southbank Technopark
 90 London Road, London SE1 6LN
 Tel: 0171 401 2626 Fax: 0171 922 8865

Company Description
 Welcom, a privately held corporation, is a worldwide leader in the development and marketing of project management software. With more than 10,000 licences worldwide, Welcom specialises in helping Fortune 500 companies implement total management solutions.

Hardware
 Windows-based, OLE 2.0 Automation and SQL

Coverage
 Head office is in Houston, regional offices in London and Paris with distributors worldwide.

Applications
 Open Plan Professional and Open Plan Desktop



88 Primavera Systems Inc
 c/o ForgeTrack Ltd
 27 Old Cross, Harford SG14 1RE
 Tel: 01922 50000 Fax: 01922 589495

Company Description
 Primavera's integrated Concentric Project Management system consists of Primavera Project Planner for large, complex projects; SureTrak for smaller less complex projects; Monte Carlo for Risk Management; Parade for performance measurement and Expectation for contract control. Training & consultancy also available.

Hardware/Compatibility PC-compatibles 486 or Pentium

Geographical Coverage Primavera products are available worldwide. ForgeTrack are UK dealers.

Applications Engineering, construction, IT, oil/gas, etc.

Costs P3 - £1995; ST - £189; MC - £695; EXP - £1600; LAN - P.O.A.



89 RCMS Group Ltd
 Horton Manor, Stanwell Road
 Horton, Berkshire SL5 8PA
 Tel: 01753 681077 Fax: 01753 685555

RCMS supplies IT services specifically designed to provide a competitive business advantage for its corporate customers. RCMS specialises in the design and development of distributed Client/Server systems. This covers operational business systems, information delivery, data-warehousing and integration with the Internet. Additional Technical Services include specialist support and Application Management. RCMS has been providing IT solutions to its customers for 10 years. Other members of RCMS Group include: NBI who provide bespoke Document Management and Workflow systems; and RCMS Intranet whose expertise is in IT Training.

Geographical coverage UK

Applications Various

Costs On application



90 BAEHAL Software Ltd
 Farnborough Aerospace Centre
 PO Box 87, Farnborough, Hants GU14 6YU
 Tel: 01252 382020 Fax: 01252 382380

Company Description
 Superb communications unite the proven software skills of the Indian sub-continent with the project management expertise of British Aerospace to enable BAEHAL, an ISO 9001 software services provider, to deliver high quality, cost effective solutions to British industry.

Hardware
 Client Server, Mainframe and PCs.

Geographical Coverage
 Europe, US and Pacific Rim.

Cost
 Up to 50% less than UK rates.

91 Solid Edge

91 Intergraph (UK) Ltd
 Delta Business Pl, Gt Western Way
 Swindon Wilt. SN4 7XP
 Tel: 01793 489000 Fax: 01793 482991

Written specifically for Windows, SOLID EDGE is a revolutionary, high performance parametric 3D Solid Modelling CAD system for mechanical assembly and part modelling. SOLID EDGE signals a new era of usability openness interoperability allowing the designer more time engineering and less time driving a CAD system. Incorporating all the tools to complete part modelling, assembly, drafting, detailing and workgroup data management in one comprehensive package.

Hardware/Compatibility Intel based PC systems running Windows 95 or NT

Geographical Coverage UK Wide

Applications Part design and assembly for manufacturing industry

Cost £5000



92 Storage/ Optical & CD

93 Structural Detailing Software

94 System Management


95 Testing & Management Equipment

92 Plasmon Data Limited
 Whiting Way, Welbourn, Herts SG8 8EN
 Tel: +44 1763 262963 Fax: +44 1763 264444
 E-mail: sales@plasmon.co.uk

Plasmon manufactures and supplies a wide range of optical storage solutions including media and software. The range includes CD Recorders, low cost PD 650MB rewritable drives and MO drives with capacities of 2.6Gbytes. The industry's widest range of Jukeboxes are available with capacities from 45 to over 670 Gbytes. Software options enable seamless integration of these products into most operating systems requiring additional capacity for storage extensions, FSM, backup, archiving, and CD publication.

Hardware/Costs Prices range from £389 for PD drives, £225 for CD Recorders, and up to £34,000 for top of range Jukebox products.

Geographical Coverage Offices worldwide servicing most countries either directly or via strategic partners.



93 AccCad Software Limited
 B5-57 Maldenhead Office Park,
 Westcott Way, Maldenhead Berks SL6 3RT
 Tel: 01628 822900 Fax: 01628 823110

Company Description
 AccCad developed STRUCAD, a 3d solid modelling system for automatically detailing structural steelwork. Users create a basic wire frame model of the structure, connections and beam members are added to produce a complete solid model. The system then automatically produces workshop details or CNC data from the model. STRUCAD also offers interfaces to numerous analysis and Plant Design products. STRUCAD is the most widely used 3-d steel detailing system in the UK with over 100 customers and world-wide there are over 700 systems installed in 25 countries. AccCad is a full collaborator in the CIMsteel project.

Hardware Pentium PC operating under Windows NT

Geographical Coverage World-wide




94 Heroix Corporation Ltd
 Yeomans Court, Ware Road,
 Harford SG13 7HJ, England
 Tel: +44 (0) 1922 500005 Fax: 01922 500085

Company Description
 Can you reduce the cost of managing your systems and provide users with better service and increased productivity levels? RoboMan can. This powerful software solution detects and automatically formulates the correct solutions to system problems. Heroix Corporation is a well established company with a proven history in system management services and solutions for VMS, UNIX-DEG, HP, IBM, SUN & Windows NT.

Geographical Coverage Worldwide

Users Include 16 of the Times Top 30 Companies.



95 Frame Communications Ltd
 Upton House, 52-56 Buckingham St,
 Aylesbury, Bucks HP20 2LL
 Tel: 01296 399013 Fax: 01296 436247

Company Description
 Frame Communications Ltd has over 20 years of experience in the Data and Telecommunications market specialising in Test, Measurement, Diagnostic and Management systems, in both the private and public network environments. Test Solutions & Expertise cover: LAN/WAN, ISDN, ATM C7/567, Frame Relay, SMDs, X.25, SNA, GSM & BERT

Hardware WAN/LAN/ATM solutions via PC & Windows sw

Geographical Coverage UK, Eire & Europe

Applications Field Support, Product Development, End Users, PTT/Carriers




96 Voice & Information Processing

96 Brite Voice Systems
 Brannen House, 4 Cambridge Business Pl
 Milton Road, Cambridge, CB4 4WT
 Tel: 0161 975 4044 Fax: 0161 975 4001

Brite Voice Systems is a world leader in providing voice and information processing solutions. Users include major corporate customers, call centres and network operators. Applications range from interactive voice response and computer telephony integration to a range of network services. In addition to integrated system provision Brite can also offer its customers the use of its fully managed service bureau and its experience in the telephony auditing arena.

Geographical Coverage International - offices worldwide

Applications Voice and information processing



97 UNIX Connectivity Software

98 Voice Processing & CTI Solutions

99 Voice Recognition Software & Systems

100 Worldwide Web


97 NCD Software
 Amsco Centre, Eagle House, The Ring,
 Bracknell, Berkshire RG12 1HB
 Tel: 01344 382054 Fax: 01344 382052

Company Description
 NCD Software is a major vendor of information access products. PC-Xware is a total solution for PC & UNIX network integration, providing enterprise networking & tools to make networked PCs easy to manage for UNIX professionals. Marathon for Windows 95 / NT is an NFS solution, providing UNIX file & print integration & access to IP host-based applications.

Hardware
 Windows 3.x, Windows 95 & Windows NT

Geographical Coverage World-wide via a network of distributors and resellers

Cost Prices available



98 eurovoice limited
 Copdock House, Old London Rd, Ipswich, IP8 5JW
 Tel: 01473 730000 Fax: 01473 730001
 Web: http://www.eurovoice.co.uk


eurovoice is a specialist supplier of voice processing, computer telephony integration and internet-based solutions. Our new SWAN OmniServer provides flexible voice, fax and internet functionality on a high-performance Windows NT based platform.

Hardware/Compatibility
 Most databases and host systems, most PBXs & ACDs.

Geographical Coverage
 eurovoice focuses on Western Europe and Scandinavia.

Applications IVR/CTI, On-line services

Costs
 Solutions from £10,000




99 Vocalis Ltd
 Cheston House, Mill Court, Station Rd,
 Gt. Shelford, Cambridge CB2 5LD
 Tel: 01223 848177 Fax: 01223 848178

Vocalis is a world leader in speech technology and call processing applications, delivering speech-controlled systems that increase business efficiency and make communication easier. Products include a virtual telephone operator, a voice dialling system and bespoke applications for call centre transaction processing.

Hardware Compatibility
 Industry standard ISA hardware

Geographical Coverage
 Global

Applications
 Teleshopping, help desks, travel information, retail enquiries/ordering




100 Ethix Distribution Ltd
 Ethix House, Meadow Court, Off Market
 Place, South Normanton, Derbyshire
 Tel: 01773 863668 Fax: 01773 863919

Commercialization of the world wide web, more companies are demanding an effective and standard method to monitor their reach through the Internet. And with traffic levels growing exponentially, any delay in fixing problems can result in thousands of missed opportunities. Webwatcher Executive™ builds on the positive customer feedback gathered from the successful release of Caravelle Webwatcher™ late in 1995. See Caravelle Webwatcher Executive™ on stand W18 at Networks '96.

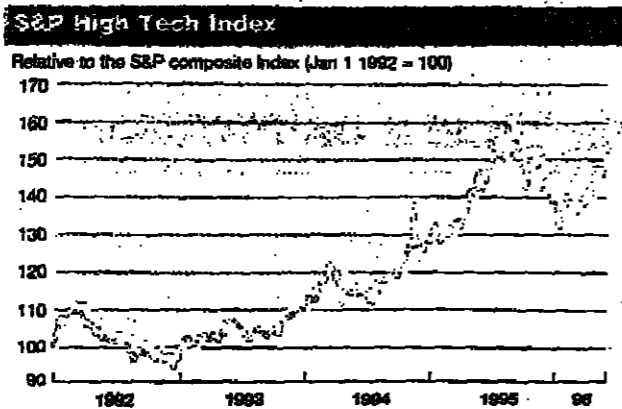
Geographical Coverage
 The world of the web

Applications
 How effective is your web site?



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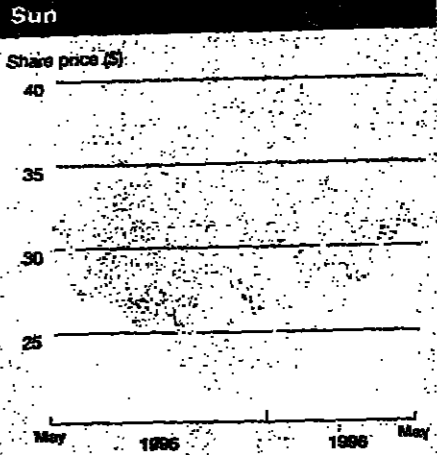
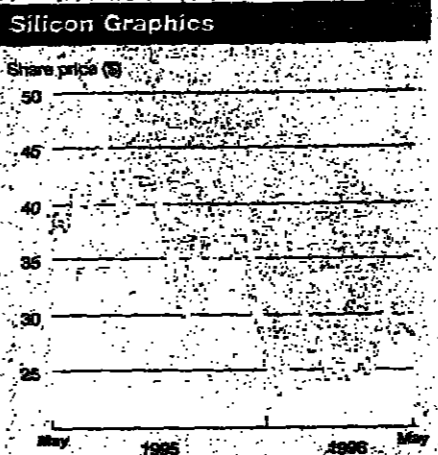
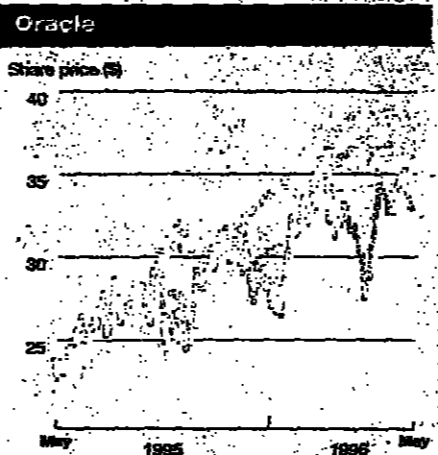
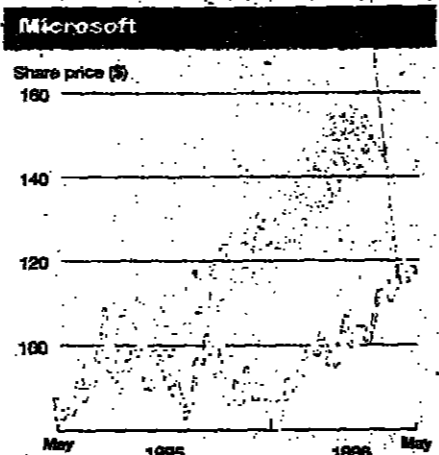
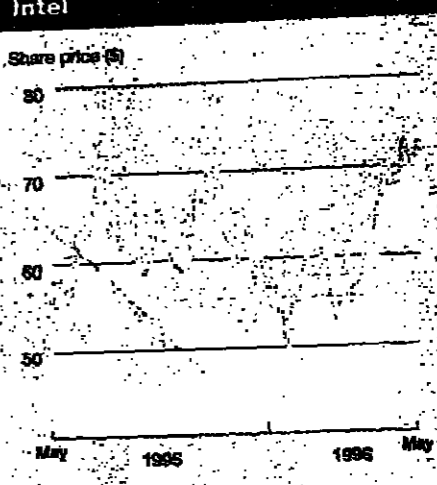
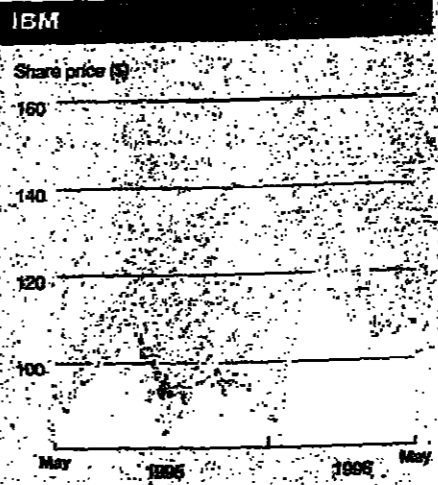
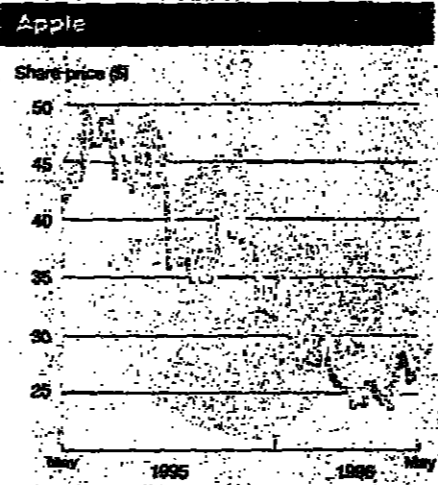
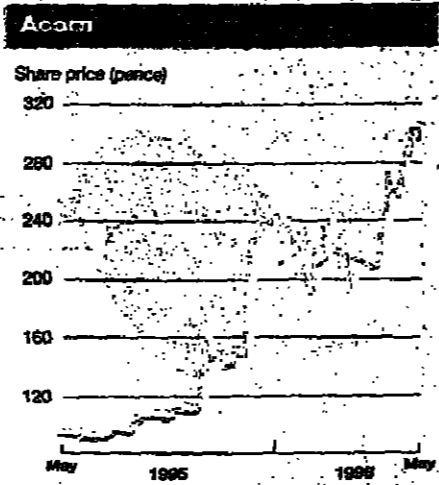
STOCKWATCH



S&P High Tech Index companies

Adv. Micro. Devc.	Digital Eqp.	Northrop Grumman Corp.
Alco Standard	DSC Communications	Novell
Arndahl	EG&G	Northern Telecom
Andrew	First Data	Oracle Corp.
Apple Computers	Gen. Dynamics	Perkin Elmer
Applied Mats	Hewlett-Packard	Pitney-Bowes
Autodesk	Intel	Raytheon
Automatic Data Proc.	Intergraph	Rockwell Int.
Boeing	Int. Bus. Mach.	Scientific-Ait.
Cabletron Sys.	Lockheed Martin Corp.	Shared Med. Sys.
Candian	Loral Deed	Silicon Graphics
Cisco Systems	McDonnell Douglas	Sun Microsystems
Computer Assoc. Intl.	Micron Tech.	Tandem Computers
Cmp. Sciences	Microsoft	Tektronix
Compaq Computers	Moore	Texas Instrs.
Cray Research	Motrola	Unisys
Data General	Nat. Semiconductor	United Technologies
		Xerox

Source: Datastream



Stockwatch comment • By Paul Taylor

IT companies ride the Internet wave

More suppliers are committed to launching network computers later this year

US technology shares were generally higher at the end of May month higher, although some shares remained under pressure, reflecting uncertain industry conditions.

The gains came despite continuing signs of weakness in the Semiconductor Industry Association's measure of chip demand in April. The ratio of orders received to orders shipped, fell to 0.78 from March's 0.79, which had been the lowest figure in nine years. Despite this, the Nasdaq composite, with a technology content of 40 per cent, closed the month 25.1 points higher at 1225.62.

Among the leading information technology shares, Microsoft, Intel and Compaq Computer all posted gains at the start of the month after reporting generally better than expected first-quarter results and mostly positive comments on the earnings outlook.

In contrast, Apple Computer's shares closed the period at little changed at 24¢ despite unveiling a new strategy - including a slimmed-down product line - designed to return the troubled US computer manufacturer to profits.

Mr Gil Amelio, who took over as chairman three months ago after Mr Michael Spindler was ousted, said Apple was at a crossroads - "we can return to prosperity or begin a long slow decline into irrelevancy. The difference will depend on how well the organisation comes together behind united goals," Mr Amelio said.

However, the group, which reported a \$740m (\$450m) on sales, down 18 per cent to \$2.2bn in the second quarter, subsequently warned in a Securities and Exchange Commission filing that it will remain in loss this year.

Dell Computer's shares rose sharply after it announced first quarter earnings which comfortably outpaced most analysts' forecasts. The group reported that its earnings rose 33 per cent to 84 cents a share. Other recent gainers have

included Oracle, the second largest software group in the world, after Microsoft, whose chairman Mr Larry Ellison has been the main driving force behind the concept of the network computer or 'thin client'.

Last month saw Oracle, International Business Machines, Apple and Netscape jointly unveil detailed and open specifications for the new machines - designed primarily to be low-cost devices for exchanging information over the Internet or corporate intranets - together with a list of early manufacturers.

Among those companies committed to launching network computers later this year, Acorn, the UK-based technology group which undertook much of the work on the NC 'reference design', said it will launch a machine dubbed the NetSurfer.

Like other companies which have succeeded in synchronising their strategies with the wave of investor interest in all Internet-related matters, Acorn's shares have risen sharply since last Autumn.

Other companies which appear to be riding the 'Internet wave' include Oracle, whose strategy is now closely linked to the growth of enterprise networking and the move towards rich content and multimedia Internetworking; and Sun Microsystems whose servers continue to provide much of the corporate computing power behind the Internet and internal intranets.

Sun also continues to benefit from interest in Java, the Internet 'apple' programming technology which has now been re-designated a mini operating system. In contrast, Silicon Graphics shares remain under pressure as investors weigh the impact of the increasing competition posed by Intel-powered machines at the low end of the workstation market and digest the implications of Silicon Graphics' recent acquisition of Cray Research.

Next month's FT-IT Review will include a focus on ATM and fast-switching - the topic was held over from this issue, due to pressure on space. The July issue will also look at applications for multimedia. For more details, see panel, page 2

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